

Chapter 8

State Indicators

Introduction.....	8-6
Chapter Overview	8-6
Types of Indicators	8-6
Data Sources and Considerations.....	8-6
Key Elements for Indicators	8-7
High-Technology Industries	8-8
Appendix Tables	8-8
Reference	8-8

Elementary/Secondary Education

Fourth Grade Mathematics Performance	8-10
Fourth Grade Mathematics Proficiency	8-12
Fourth Grade Science Performance	8-14
Fourth Grade Science Proficiency	8-16
Eighth Grade Mathematics Performance	8-18
Eighth Grade Mathematics Proficiency	8-20
Eighth Grade Science Performance	8-22
Eighth Grade Science Proficiency	8-24
Public School Teacher Salaries.....	8-26
Elementary and Secondary Public School Current Expenditures as Share of Gross Domestic Product.....	8-28
Current Expenditures per Pupil for Elementary and Secondary Public Schools	8-30
Share of Public High School Students Taking Advanced Placement Exams	8-32
Share of Public High School Students Scoring 3 or Higher on at Least One Advanced Placement Exam.....	8-34
High School Graduates or Higher Among Individuals 25–44 Years Old	8-36

Higher Education

Bachelor’s Degrees Conferred per 1,000 Individuals 18–24 Years Old	8-38
Bachelor’s Degrees in Natural Sciences and Engineering Conferred per 1,000 Individuals 18–24 Years Old	8-40
S&E Degrees as Share of Higher Education Degrees Conferred	8-42
Natural Sciences and Engineering Degrees as Share of Higher Education Degrees Conferred ...	8-44
S&E Graduate Students per 1,000 Individuals 25–34 Years Old.....	8-46
Advanced S&E Degrees as Share of S&E Degrees Conferred.....	8-48
Advanced Natural Sciences and Engineering Degrees as Share of Natural Sciences and Engineering Degrees Conferred	8-50
Average Undergraduate Charge at Public 4-Year Institutions	8-52
Average Undergraduate Charge at Public 4-Year Institutions as Share of Disposable Personal Income.....	8-54
State Expenditures on Student Aid per Full-Time Undergraduate Student.....	8-56
Associate’s Degree Holders or Higher Among Individuals 25–44 Years Old	8-58
Bachelor’s Degree Holders or Higher Among Individuals 25–44 Years Old	8-60

Workforce

Bachelor's Degree Holders Potentially in the Workforce	8-62
Individuals in S&E Occupations as Share of Workforce.....	8-64
Employed S&E Doctorate Holders as Share of Workforce.....	8-66
Engineers as Share of Workforce	8-68
Life and Physical Scientists as Share of Workforce	8-70
Computer Specialists as Share of Workforce	8-72

Financial Research and Development Inputs

R&D as Share of Gross Domestic Product.....	8-74
Federal R&D Obligations per Civilian Worker.....	8-76
Federal R&D Obligations per Individual in S&E Occupation	8-78
State Agency R&D Expenditures per \$1 Million of Gross Domestic Product.....	8-80
State Agency R&D Expenditures per Civilian Worker	8-82
State Agency R&D Expenditures per Individual in S&E Occupation	8-84
Business-Performed R&D as Share of Private-Industry Output.....	8-86
Academic R&D per \$1,000 of Gross Domestic Product	8-88

R&D Outputs

S&E Doctorates Conferred per 1,000 Employed S&E Doctorate Holders	8-90
Academic S&E Article Output per 1,000 S&E Doctorate Holders in Academia.....	8-92
Academic S&E Article Output per \$1 Million of Academic R&D	8-94
Academic Patents Awarded per 1,000 S&E Doctorate Holders in Academia	8-96
Patents Awarded per 1,000 Individuals in S&E Occupations	8-98

Science and Technology in the Economy

High-Technology Share of All Business Establishments	8-100
Net High-Technology Business Formations as Share of All Business Establishments.....	8-102
Employment in High-Technology Establishments as Share of Total Employment	8-104
Average Annual Federal SBIR Funding per \$1 Million of Gross Domestic Product	8-106
Venture Capital Disbursed per \$1,000 of Gross Domestic Product	8-108
Venture Capital Deals as Share of High-Technology Business Establishments	8-110
Venture Capital Disbursed per Venture Capital Deal.....	8-112

List of Tables

Table 8-1. Average fourth grade mathematics performance, by state: 2000, 2005, and 2007.....	8-11
Table 8-2. Students reaching proficiency in fourth grade mathematics, by state: 2000, 2005, and 2007.....	8-13
Table 8-3. Average fourth grade science performance, by state: 2000 and 2005.....	8-15
Table 8-4. Students reaching proficiency in fourth grade science, by state: 2000 and 2005.....	8-17
Table 8-5. Average eighth grade mathematics performance, by state: 2000, 2005, and 2007	8-19
Table 8-6. Students reaching proficiency in eighth grade mathematics, by state: 2000, 2005, and 2007.....	8-21
Table 8-7. Average eighth grade science performance, by state: 2000 and 2005	8-23
Table 8-8. Students reaching proficiency in eighth grade science, by state: 2000 and 2005	8-25
Table 8-9. Public school teacher salaries, by state: 1997, 2002, and 2007.....	8-27
Table 8-10. Elementary and secondary public school current expenditures as share of gross domestic product, by state: 1997, 2002, and 2007	8-29
Table 8-11. Current expenditures per pupil for elementary and secondary public schools, by state: 1997, 2002, and 2007	8-31

Table 8-12. Share of public high school students taking Advanced Placement Exams, by state: 2000, 2004, and 2008	8-33
Table 8-13. Share of public high school students scoring 3 or higher on at least one Advanced Placement Exam, by state: 2000, 2004, and 2008	8-35
Table 8-14. High school graduates or higher among individuals 25–44 years old, by state: 2000, 2003, and 2007	8-37
Table 8-15. Bachelor's degrees conferred per 1,000 individuals 18–24 years old, by state: 1997, 2002, and 2007	8-39
Table 8-16. Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old, by state: 1997, 2002, and 2007	8-41
Table 8-17. S&E degrees as share of higher education degrees conferred, by state: 1997, 2002, and 2007	8-43
Table 8-18. Natural sciences and engineering degrees as share of higher education degrees conferred, by state: 1997, 2002, and 2007	8-45
Table 8-19. S&E graduate students per 1,000 individuals 25–34 years old, by state: 1997, 2002, and 2007	8-47
Table 8-20. Advanced S&E degrees as share of S&E degrees conferred, by state: 1997, 2002, and 2007	8-49
Table 8-21. Advanced natural sciences and engineering degrees as share of natural sciences and engineering degrees conferred, by state: 1997, 2002, and 2007	8-51
Table 8-22. Average undergraduate charge at public 4-year institutions, by state: 1998, 2003, and 2008	8-53
Table 8-23. Average undergraduate charge at public 4-year institutions as share of disposable personal income, by state: 1998, 2003, and 2008	8-55
Table 8-24. State expenditures on student aid per full-time undergraduate student, by state: 1997, 2002, and 2007	8-57
Table 8-25. Associate's degree holders or higher among individuals 25–44 years old, by state: 2000, 2003, and 2007	8-59
Table 8-26. Bachelor's degree holders or higher among individuals 25–44 years old, by state: 2000, 2003, and 2007	8-61
Table 8-27. Bachelor's degree holders potentially in the workforce, by state: 2000, 2003, and 2007	8-63
Table 8-28. Individuals in S&E occupations as share of workforce, by state: 2004, 2006, and 2008	8-65
Table 8-29. Employed S&E doctorate holders as share of workforce, by state: 1997, 2001, and 2006	8-67
Table 8-30. Engineers as share of workforce, by state: 2004, 2006, and 2008	8-69
Table 8-31. Life and physical scientists as share of workforce, by state: 2004, 2006, and 2008	8-71
Table 8-32. Computer specialists as share of workforce, by state: 2004, 2006, and 2008	8-73
Table 8-33. R&D as share of gross domestic product, by state: 1998, 2002, and 2007	8-75
Table 8-34. Federal R&D obligations per civilian worker, by state: 1997, 2002, and 2007	8-77
Table 8-35. Federal R&D obligations per individual in S&E occupation, by state: 2003, 2005, and 2007	8-79
Table 8-36. State agency R&D expenditures per \$1 million of gross domestic product, by state: 2006 and 2007	8-81
Table 8-37. State agency R&D expenditures per civilian worker, by state: 2006 and 2007	8-83
Table 8-38. State agency R&D expenditures per individual in S&E occupation, by state: 2006 and 2007	8-85
Table 8-39. Business-performed R&D as share of private-industry output, by state: 1998, 2002, and 2007	8-87

Table 8-40. Academic R&D per \$1,000 of gross domestic product, by state: 1998, 2003, and 2008.....	8-89
Table 8-41. S&E doctorates conferred per 1,000 employed S&E doctorate holders, by state: 1997, 2001, and 2006	8-91
Table 8-42. Academic S&E article output per 1,000 S&E doctorate holders in academia, by state: 1997, 2003, and 2008/06	8-93
Table 8-43. Academic S&E article output per \$1 million of academic R&D, by state: 1998, 2003, and 2008.....	8-95
Table 8-44. Academic patents awarded per 1,000 S&E doctorate holders in academia, by state: 1997, 2001, and 2006	8-97
Table 8-45. Patents awarded per 1,000 individuals in S&E occupations, by state: 2004, 2006, and 2008.....	8-99
Table 8-46. High-technology share of all business establishments, by state: 2003, 2004, and 2006.....	8-101
Table 8-47. Net high-technology business formations as share of all business establishments, by state: 2004 and 2006.....	8-103
Table 8-48. Employment in high-technology establishments as share of total employment, by state: 2003, 2004, and 2006	8-105
Table 8-49. Average annual federal SBIR funding per \$1 million of gross domestic product, by state: 1998–2000, 2002–04, and 2006–08	8-107
Table 8-50. Venture capital disbursed per \$1,000 of gross domestic product, by state: 1998, 2003, and 2008.....	8-109
Table 8-51. Venture capital deals as share of high-technology business establishments, by state: 2003, 2004, and 2006	8-111
Table 8-52. Venture capital disbursed per venture capital deal, by state: 1998, 2003, and 2008.....	8-113
Table 8-A. 2002 NAICS codes that constitute high-technology industries.....	8-9

List of Figures

Figure 8-1. Average fourth grade mathematics performance: 2007.....	8-10
Figure 8-2. Students reaching proficiency in fourth grade mathematics: 2007.....	8-12
Figure 8-3. Average fourth grade science performance: 2005	8-14
Figure 8-4. Students reaching proficiency in fourth grade science: 2005	8-16
Figure 8-5. Average eighth grade mathematics performance: 2007.....	8-18
Figure 8-6. Students reaching proficiency in eighth grade mathematics: 2007.....	8-20
Figure 8-7. Average eighth grade science performance: 2005	8-22
Figure 8-8. Students reaching proficiency in eighth grade science: 2005	8-24
Figure 8-9. Public school teacher salaries: 2007	8-26
Figure 8-10. Elementary and secondary public school current expenditures as share of gross domestic product: 2007	8-28
Figure 8-11. Current expenditures per pupil for elementary and secondary public schools: 2007	8-30
Figure 8-12. Share of public high school students taking Advanced Placement Exams: 2008	8-32
Figure 8-13. Share of public high school students scoring 3 or higher on at least one Advanced Placement Exam: 2008	8-34
Figure 8-14. High school graduates or higher among individuals 25–44 years old: 2007	8-36
Figure 8-15. Bachelor's degrees conferred per 1,000 individuals 18–24 years old: 2007	8-38
Figure 8-16. Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old: 2007	8-40
Figure 8-17. S&E degrees as share of higher education degrees conferred: 2007	8-42

Figure 8-18. Natural sciences and engineering degrees as share of higher education degrees conferred: 2007	8-44
Figure 8-19. S&E graduate students per 1,000 individuals 25–34 years old: 2007.....	8-46
Figure 8-20. Advanced S&E degrees as share of S&E degrees conferred: 2007	8-48
Figure 8-21. Advanced natural sciences and engineering degrees as share of natural sciences and engineering degrees conferred: 2007	8-50
Figure 8-22. Average undergraduate charge at public 4-year institutions: 2008.....	8-52
Figure 8-23. Average undergraduate charge at public 4-year institutions as share of disposable personal income: 2008	8-54
Figure 8-24. State expenditures on student aid per full-time undergraduate student: 2007	8-56
Figure 8-25. Associate's degree holders or higher among individuals 25–44 years old: 2007.....	8-58
Figure 8-26. Bachelor's degree holders or higher among individuals 25–44 years old: 2007.....	8-60
Figure 8-27. Bachelor's degree holders potentially in the workforce: 2007	8-62
Figure 8-28. Individuals in S&E occupations as share of workforce: 2008	8-64
Figure 8-29. Employed S&E doctorate holders as share of workforce: 2006	8-66
Figure 8-30. Engineers as share of workforce: 2008.....	8-68
Figure 8-31. Life and physical scientists as share of workforce: 2008.....	8-70
Figure 8-32. Computer specialists as share of workforce: 2008.....	8-72
Figure 8-33. R&D as share of gross domestic product: 2007.....	8-74
Figure 8-34. Federal R&D obligations per civilian worker: 2007.....	8-76
Figure 8-35. Federal R&D obligations per individual in S&E occupation: 2007	8-78
Figure 8-36. State agency R&D expenditures per \$1 million of gross domestic product: 2007....	8-80
Figure 8-37. State agency R&D expenditures per civilian worker: 2007.....	8-82
Figure 8-38. State agency R&D expenditures per individual in S&E occupation: 2007	8-84
Figure 8-39. Business-performed R&D as share of private-industry output: 2007.....	8-86
Figure 8-40. Academic R&D per \$1,000 of gross domestic product: 2008	8-88
Figure 8-41. S&E doctorates conferred per 1,000 employed S&E doctorate holders: 2006.....	8-90
Figure 8-42. Academic S&E article output per 1,000 S&E doctorate holders in academia: 2008/06	8-92
Figure 8-43. Academic S&E article output per \$1 million of academic R&D: 2008.....	8-94
Figure 8-44. Academic patents awarded per 1,000 S&E doctorate holders in academia: 2006 ...	8-96
Figure 8-45. Patents awarded per 1,000 individuals in S&E occupations: 2008.....	8-98
Figure 8-46. High-technology share of all business establishments: 2006.....	8-100
Figure 8-47. Net high-technology business formations as share of all business establishments: 2006.....	8-102
Figure 8-48. Employment in high-technology establishments as share of total employment: 2006	8-104
Figure 8-49. Average annual federal SBIR funding per \$1 million of gross domestic product: 2006–08	8-106
Figure 8-50. Venture capital disbursed per \$1,000 of gross domestic product: 2008	8-108
Figure 8-51. Venture capital deals as share of high-technology business establishments: 2006.....	8-110
Figure 8-52. Venture capital disbursed per venture capital deal: 2008	8-112
Figure 8-A. U.S. map and list of abbreviations	8-7

Introduction

Chapter Overview

To address the interest of the policy and research communities in the role of science and technology (S&T) in state and regional economic development, this chapter presents findings on state trends in S&T education, the employed workforce, finance, and research and development. This chapter includes 52 indicators for individual states, the District of Columbia, and Puerto Rico.

Although data for Puerto Rico are reported whenever available, they frequently were collected by a different source, making it unclear whether the methodology used for data collection and analysis is comparable with that used for the states. For this reason, Puerto Rico was neither ranked with the states nor assigned a quartile value that could be displayed on the maps. Data for United States territories and protectorates, such as American Samoa, Guam, Northern Mariana Islands, and Virgin Islands, were available only on a sporadic basis and for fewer than one-quarter of the indicators and thus are not included.

The indicators are designed to present information about various aspects of state S&T infrastructure. The data used to calculate the indicators were gathered from public and private sources. When possible, data covering a 10-year span are provided to identify meaningful trends. However, consistent data were not always available for the 10-year period, and data are given only for the years in which comparisons are appropriate. Most indicators contain data for 2006–07; some contain data for 2008.

Ready access to accurate and timely information is an important tool for formulating effective S&T policies at the state level. By studying the programs and performance of their peers, state policymakers may be able to better assess and enhance their own programs and performance. Corporations and other organizations considering investments at the state level may also benefit from this information. The tables are intended to provide quantitative data that may be relevant to technology-based economic development. More generally, the chapter aims to foster further consideration of the appropriate uses of state-level indicators.

Types of Indicators

Fifty-two indicators are included in this chapter and grouped into the following areas:

- ♦ Elementary and secondary education
- ♦ Higher education
- ♦ Workforce
- ♦ Financial R&D inputs
- ♦ Research and development outputs
- ♦ S&T in the economy

The first two areas address state educational attainment. Student achievement is expressed in terms of performance, which refers to the average state score on a standardized test, and proficiency, which is expressed as the percentage

of students who have achieved at least the expected level of competence on the standardized test.

Comparable state-level performance data are not available for high school students. Instead, mastery of college-level material through performance on Advanced Placement Exams has been included as a measure of the skills being developed by the top-performing high school students. Other indicators in education focus on state spending, teacher salaries, student costs, and undergraduate and graduate degrees in S&E. Three indicators measure the level of education in the populations of individual states.

Workforce indicators focus on the level of S&E training in the employed labor force. These indicators reflect the higher education level of the labor force and the degree of specialization in S&E disciplines and occupations.

Financial indicators address the sources and level of funding for R&D. They show how much R&D is being performed relative to the size of a state's business base. New indicators in this edition focus on state government agency funding for R&D. This section enables readers to compare the extent to which R&D is conducted by industrial, academic, or state agency performers.

The final two sections provide measures of outputs. The first focuses on the work products of the academic community. It includes the number of new doctorates conferred, the publication of academic articles, and patent activity from the academic community and from all sources in the state.

The second section of output indicators examines the robustness of a region's S&T-related economic activity. These indicators include venture capital activity, Small Business Innovation Research awards, and high-technology business activity. Although data that adequately address both the quantity and quality of R&D results are difficult to find, these indicators offer a reasonable information base.

Data Sources and Considerations

Raw data for each indicator are presented in the tables. Each table provides an average value for all states, labeled "United States." For most indicators, the state average was calculated by summing the values for the 50 states and the District of Columbia for both the numerator and the denominator and then dividing the two. Any alternate approach is indicated in the notes at the bottom of the table.

The values for most indicators are expressed as ratios or percentages to facilitate comparison between states that differ substantially in size. For example, an indicator of higher education achievement is not defined as the absolute number of degrees conferred in a state because sparsely populated states are unlikely to have or need as extensive a higher education system as states with larger populations. Instead, the indicator is defined as the number of degrees per number of residents in the college-age cohort, which measures the intensity of educational services relative to the size of the resident population.

Readers must exercise caution when evaluating the indicator values for the District of Columbia. Frequently, the

indicator value for the District of Columbia is appreciably different from the indicator values for any of the states. The District of Columbia is unique because it is an urban region with a large federal presence and many universities. In addition, it has a large student population and provides employment for many individuals who live in neighboring states. Indicator values can be quite different depending on whether data attributed to the District of Columbia are based on where people live or where they work.

Key Elements for Indicators

Six key elements are provided for each indicator. The first element is a map color-coded to show in which quartile each state placed on that indicator for the latest year that data were available. This helps the reader quickly grasp geographic patterns. The sample map below shows the outline of each state. On the indicator maps, the darkest color indicates states that rank in the first or highest quartile, and white indicates states that rank in the fourth or lowest quartile. Cross-hatching indicates states for which no data are available.

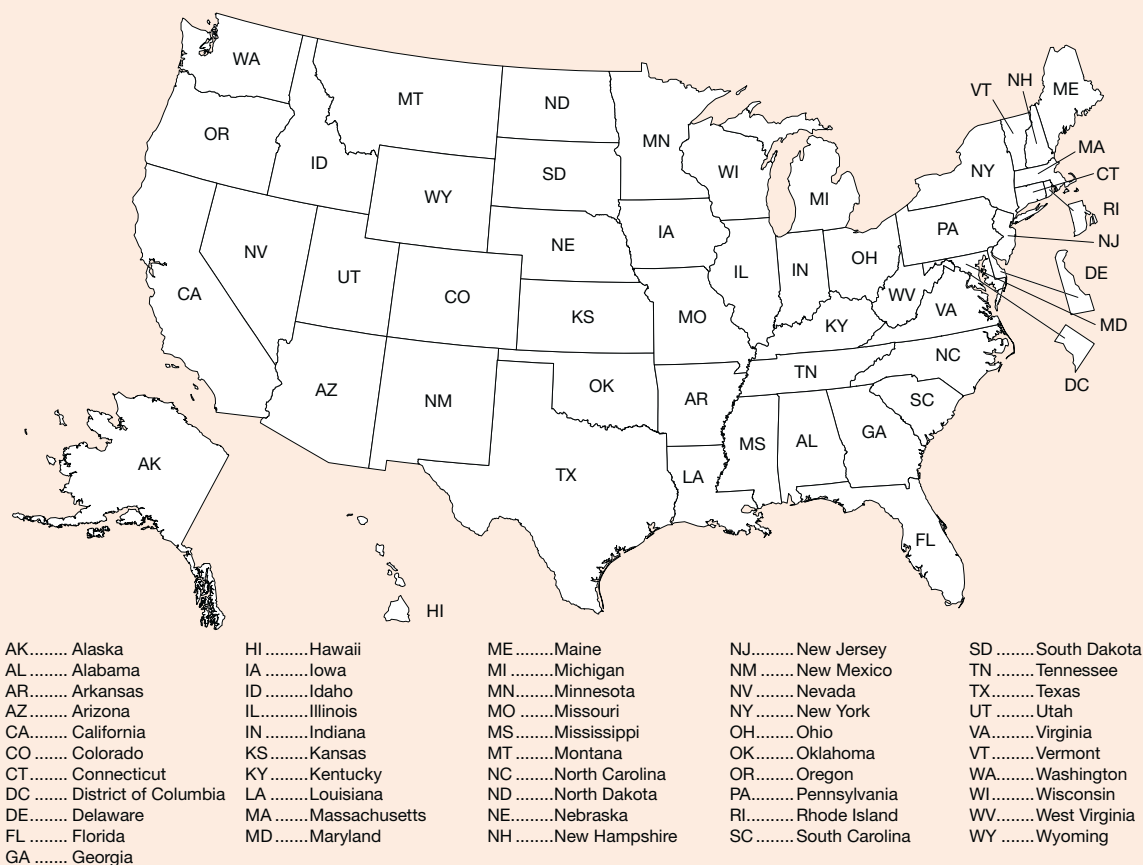
The second element is a quartiles table. States are listed alphabetically by quartile. The range of indicator values for

that quartile is shown at the top of the column. Ties at quartile breaks were resolved by moving the tied states into one quartile. All of the indicators are broad measures, and several rely on sample estimates that have a margin of error. Small differences in state values generally carry little useful information.

In 1978, Congress initiated the Experimental Program to Stimulate Competitive Research (EPSCoR) at the National Science Foundation to build R&D capacity in states that have historically been less competitive in receiving federal R&D funding. Subsequently, several federal agencies established similar programs, the largest of which is the Institutional Development Award (IDeA) program at the National Institutes of Health.

The quartiles table identifies states in the EPSCoR group—those identified as eligible for EPSCoR-like programs by least five federal agencies or departments. The 24 EPSCoR states are Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia,

Figure 8-A
U.S. map and list of abbreviations



and Wyoming. The EPSCoR Program is discussed further in chapter 5, “Academic Research and Development,” in the sidebar “EPSCoR: The Experimental Program to Stimulate Competitive Research.” The remaining 26 states are considered states in the non-EPSCoR group.

The third element, at the bottom of the map box, is a short citation for the data source. The full citation appears under the table on the facing page.

The fourth element, in a shaded box on the lower left side of the page, is a summary of findings that includes the national average and comments on national and state trends and patterns for the particular indicator. Although most of the findings are directly related to the data, some represent interpretations that are meant to stimulate further investigation and discussion.

The fifth element, on the lower right side of the page, is a description of the indicator and includes information pertaining to the underlying data.

The final element is the data table, which appears on the facing page. Up to three years of data and the calculated values of the indicator are presented for each state, the District of Columbia, and Puerto Rico. Puerto Rico is included in the data table only when data are available.

For selected indicators, the data table has been expanded to include the average data and indicator value for the 50 states and the District of Columbia, and the averages for the EPSCoR and non-EPSCoR states. These averages have been calculated in two ways. The first two lines, “EPSCoR states” and “Non-EPSCoR states,” treat each group as a single geographical unit, ignoring the division of that unit into separate states. The ratio for the group is calculated by totaling the numerator value of each of the states in the group and the denominator value of each of the states in the group and dividing to compute an average. For example, the EPSCoR states average of R&D by gross domestic product by state is calculated by summing the R&D of all the EPSCoR states, summing the gross domestic product of these states, and dividing to compute an average. States with more R&D and a larger gross domestic product affect this average more than smaller ones do, just as data on California affect U.S. totals more than data on Wyoming do.

The third and fourth lines, “Average EPSCoR state value” and “Average non-EPSCoR state value,” represent the average of the individual state ratios for an indicator. The average EPSCoR state value for R&D by gross domestic product by state is calculated by summing the ratios for the 24 EPSCoR states and dividing by 24. All state ratios count equally in this computation.

High-Technology Industries

To define high-technology industries, this chapter uses a modification of the approach employed by the Bureau of Labor Statistics (BLS) (Hecker 2005). BLS’s approach is based on the intensity of high-technology employment within an industry.

High-technology occupations include scientific, engineering, and technician occupations. These occupations employ workers who possess an in-depth knowledge of the theories and principles of science, engineering, and mathematics, which is generally acquired through postsecondary education in some field of technology. An industry is considered a high-technology industry if employment in technology-oriented occupations accounts for a proportion of that industry’s total employment that is at least twice the 4.9% average for all industries (i.e., 9.8% or higher).

In this chapter, the category “high-technology industries” refers only to private sector businesses. In contrast, BLS includes the “Federal Government, excluding Postal Service” in its listing of high-technology industries.

Each industry is defined by a four-digit code that is based on the listings in the 2002 North American Industry Classification System (NAICS). The 2002 NAICS codes contain a number of additions and changes from the previous 1997 NAICS codes that were used to classify business establishments in data sets covering the period 1998–2002, and therefore cannot be applied to data sets from earlier years.

The list of high-technology industries used in this chapter includes the 46 four-digit codes from the 2002 NAICS listing shown in table 8-A.

Appendix Tables

Additional data tables pertaining to the indicators in this chapter have been included in the appendix. These tables provide supplemental information to assist the reader in evaluating the data used in an indicator. The appendix tables contain state-level data on the performance of students in different racial/ethnic and gender groups on the National Assessment of Educational Progress (NAEP) evaluations. Additional data on the coefficient of variation for data sources in the chapter also are presented in the appendix tables when they are available.

Reference

Hecker D. 2005. High-technology employment: A NAICS-based update. *Monthly Labor Review* 128(7):57–72.

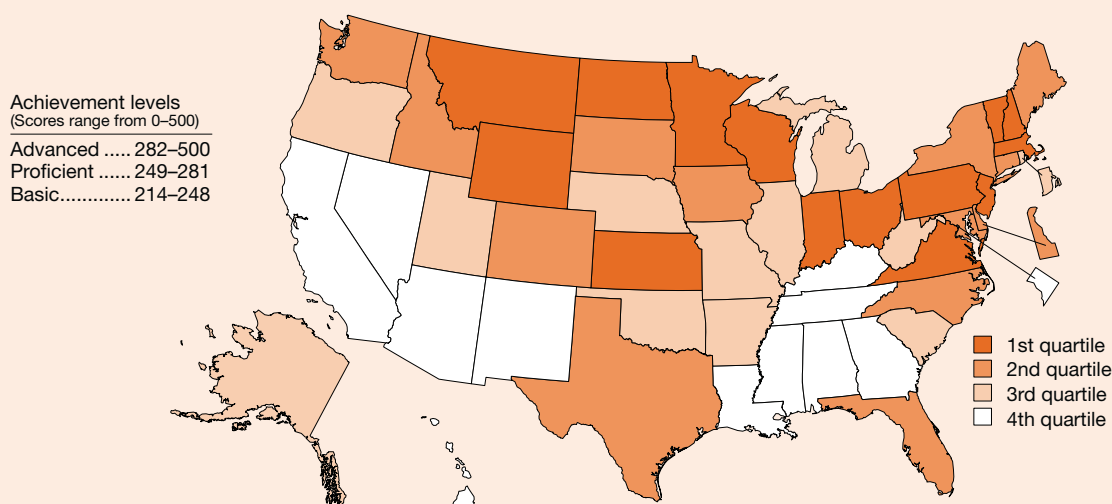
Table 8-A
2002 NAICS codes that constitute high-technology industries

NAICS code	Industry
1131, 32.....	Forestry
2111.....	Oil and gas extraction
2211.....	Electric power generation, transmission, and distribution
3241.....	Petroleum and coal products manufacturing
3251.....	Basic chemical manufacturing
3252.....	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing
3253.....	Pesticide, fertilizer, and other agricultural chemical manufacturing
3254.....	Pharmaceutical and medicine manufacturing
3255.....	Paint, coating, and adhesive manufacturing
3259.....	Other chemical product and preparation manufacturing
3332.....	Industrial machinery manufacturing
3333.....	Commercial and service industry machinery manufacturing
3336.....	Engine, turbine, and power transmission equipment manufacturing
3339.....	Other general purpose machinery manufacturing
3341.....	Computer and peripheral equipment manufacturing
3342.....	Communications equipment manufacturing
3343.....	Audio and video equipment manufacturing
3344.....	Semiconductor and other electronic component manufacturing
3345.....	Navigational, measuring, electromedical, and control instruments manufacturing
3346.....	Manufacturing and reproducing magnetic and optical media
3353.....	Electrical equipment manufacturing
3364.....	Aerospace product and parts manufacturing
3369.....	Other transportation equipment manufacturing
4234.....	Professional and commercial equipment and supplies, merchant wholesalers
4861.....	Pipeline transportation of crude oil
4862.....	Pipeline transportation of natural gas
4869.....	Other pipeline transportation
5112.....	Software publishers
5161.....	Internet publishing and broadcasting
5171.....	Wired telecommunications carriers
5172.....	Wireless telecommunications carriers (except satellite)
5173.....	Telecommunications resellers
5174.....	Satellite telecommunications
5179.....	Other telecommunications
5181.....	Internet service providers and Web search portals
5182.....	Data processing, hosting, and related services
5211.....	Monetary authorities, central bank
5232.....	Securities and commodity exchanges
5413.....	Architectural, engineering, and related services
5415.....	Computer systems design and related services
5416.....	Management, scientific, and technical consulting services
5417.....	Scientific research and development services
5511.....	Management of companies and enterprises
5612.....	Facilities support services
8112.....	Electronic and precision equipment repair and maintenance

NAICS = North American Industry Classification System

Fourth Grade Mathematics Performance

Figure 8-1
Average fourth grade mathematics performance: 2007



1st quartile (252–244)	2nd quartile (243–240)	3rd quartile (239–236)	4th quartile (235–214)
Indiana Kansas ‡ Massachusetts Minnesota Montana ‡ New Hampshire ‡ New Jersey North Dakota ‡ Ohio Pennsylvania Vermont ‡ Virginia Wisconsin Wyoming ‡	Colorado Connecticut Delaware ‡ Florida Idaho ‡ Iowa Maine ‡ Maryland New York North Carolina South Dakota ‡ Texas Washington	Alaska ‡ Arkansas ‡ Illinois Michigan Missouri Nebraska ‡ Oklahoma ‡ Oregon Rhode Island ‡ South Carolina ‡ Utah West Virginia ‡	Alabama ‡ Arizona ‡ California District of Columbia Georgia Hawaii ‡ Kentucky ‡ Louisiana ‡ Mississippi ‡ Nevada ‡ New Mexico ‡ Tennessee

‡ EPSCoR state

NOTE: See figure 8-2 text for explanation of achievement levels.

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-1.

Findings

- In 2007, the nationwide average mathematics score of fourth grade public school students was 239, a significant increase from 224 in 2000.
- For the 41 jurisdictions that participated in both the 2000 and 2007 mathematics assessments, the average score for public school fourth graders showed a statistically significant increase between 2000 and 2007. Only the District of Columbia reported an average score in 2007 that was below the 2000 national average of 224.
- The entire fourth grade student sample, including students performing at the 10th, 25th, 50th, 75th, and 90th percentiles, demonstrated statistically significant gains in mathematics scores between 2000 and 2007.
- The states with the highest average mathematics scores for fourth graders were concentrated in the northern United States. A number of EPSCoR states were included in this group.
- The gaps in mathematics scores between white fourth graders and black or Hispanic fourth graders narrowed significantly between 2000 and 2007. The gender gap in fourth grade mathematics scores, although much smaller, showed no significant change between 2000 and 2007.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in mathematics for its fourth grade students in public schools. The NAEP mathematics assessment is a federally authorized measure of student performance in which all 50 states and the District of Columbia participated in 2007.

Student performance is presented in terms of average scores on a scale from 0 to 500. Higher scores indicate that fourth graders are demonstrating a stronger foundation for adult mathematics competency. An average score designated as NA (not available) indicates that the state either did not participate in the assessment or did not have a representative sample of fourth graders that was large enough for reporting state-level results.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-1
**Average fourth grade mathematics performance, by state: 2000, 2005,
 and 2007**
 (Score out of 500)

State	2000	2005	2007
United States.....	224*	237*	239
Alabama.....	217*	225*	229
Alaska.....	NA	236	237
Arizona.....	219*	230	232
Arkansas.....	216*	236	238
California.....	213*	230	230
Colorado.....	NA	239	240
Connecticut.....	234*	242	243
Delaware.....	NA	240*	242
District of Columbia.....	192*	211*	214
Florida.....	NA	239*	242
Georgia.....	219*	234	235
Hawaii.....	216*	230*	234
Idaho.....	224*	242	241
Illinois.....	223*	233*	237
Indiana.....	233*	240*	245
Iowa.....	231*	240*	243
Kansas.....	232*	246	248
Kentucky.....	219*	231*	235
Louisiana.....	218*	230	230
Maine.....	230*	241	242
Maryland.....	222*	238	240
Massachusetts.....	233*	247*	252
Michigan.....	229*	238	238
Minnesota.....	234*	246	247
Mississippi.....	211*	227	228
Missouri.....	228*	235*	239
Montana.....	228*	241*	244
Nebraska.....	225*	238	238
Nevada.....	220*	230	232
New Hampshire.....	NA	246*	249
New Jersey.....	NA	244*	249
New Mexico.....	213*	224*	228
New York.....	225*	238*	243
North Carolina.....	230*	241	242
North Dakota.....	230*	243*	245
Ohio.....	230*	242	245
Oklahoma.....	224*	234*	237
Oregon.....	224*	238	236
Pennsylvania.....	NA	241*	244
Rhode Island.....	224*	233	236
South Carolina.....	220*	238	237
South Dakota.....	NA	242	241
Tennessee.....	220*	232	233
Texas.....	231*	242	242
Utah.....	227*	239	239
Vermont.....	232*	244*	246
Virginia.....	230*	240*	244
Washington.....	NA	242	243
West Virginia.....	223*	231*	236
Wisconsin.....	NA	241*	244
Wyoming.....	229*	243	244
Puerto Rico.....	NA	NA	NA

*significantly different ($p < .05$) from 2007 when only one jurisdiction or the nation is being examined;
 NA = not available

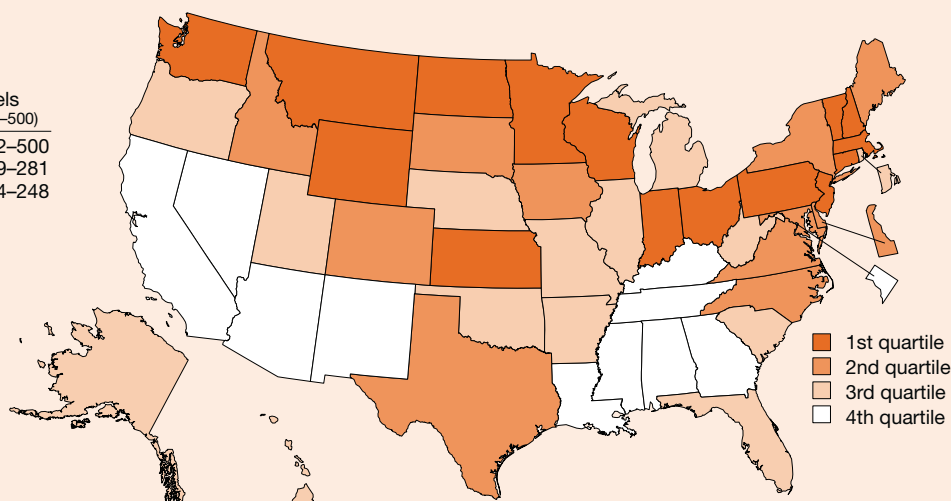
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Fourth Grade Mathematics Proficiency

Figure 8-2
Students reaching proficiency in fourth grade mathematics: 2007
 (Percent; scores of 249 and above indicate proficiency)

Achievement levels
 (Scores range from 0–500)
 Advanced 282–500
 Proficient 249–281
 Basic 214–248



1st quartile (58%–44%)	2nd quartile (43%–40%)	3rd quartile (39%–33%)	4th quartile (32%–14%)
Connecticut Indiana Kansas † Massachusetts Minnesota Montana † New Hampshire † New Jersey North Dakota † Ohio Pennsylvania Vermont † Washington Wisconsin Wyoming †	Colorado Delaware † Idaho † Iowa Maine † Maryland New York North Carolina South Dakota † Texas Virginia	Alaska † Arkansas † Florida Hawaii † Illinois Michigan Missouri Nebraska † Oklahoma † Oregon Rhode Island † South Carolina † Utah West Virginia †	Alabama † Arizona California District of Columbia Georgia Kentucky † Louisiana † Mississippi † Nevada † New Mexico † Tennessee

† EPSCoR state

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-2.

Findings

- In 2007, 39% of fourth grade public school students nationwide performed at or above the proficient level in mathematics, which represents a statistically significant increase from 22% in 2000. Several states more than doubled the percentage of their students performing at or above the proficient level.
- Of the 41 jurisdictions that participated in both the 2000 and 2007 assessments, all showed significant increases in mathematics proficiency levels for public school fourth graders in 2007.
- The states with the highest percentages of fourth-graders who were proficient in mathematics are concentrated in the northern United States. A number of EPSCoR states were included in this group.
- Substantial differences in mathematics proficiency exist among racial/ethnic groups of fourth graders. The gaps increased between 2000 and 2007 as blacks and Hispanics failed to match the gains made in mathematics proficiency by whites. The gender gap among fourth graders is much smaller and remained unchanged between 2000 and 2007.

This indicator represents the proportion of a state's fourth grade students in public schools that has met or exceeded the proficiency standard in mathematics.

The National Assessment of Educational Progress (NAEP) provides a federally authorized measure of student performance in mathematics. The National Assessment Governing Board sets performance standards that provide a context for interpreting NAEP results. The standards define “proficiency” as well as performance levels that indicate greater (“advanced”) and lesser (“basic”) accomplishment. For the fourth grade, the proficient level (scores 249–281) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge, its application to real-world situations, and mastery of appropriate analytical skills. The advanced level (282–500) signifies superior performance. The basic level (214–248) denotes partial mastery of knowledge and skills that are prerequisite for proficient work.

Approximately 198,000 fourth grade students in 7,800 schools participated in the 2007 NAEP mathematics assessment. A designation of NA (not available) indicates that the state either did not participate in the assessment or did not have a representative sample of fourth graders that was large enough for reporting state-level results.

Table 8-2

Students reaching proficiency in fourth grade mathematics, by state: 2000, 2005, and 2007

(Percent)

State	2000	2005	2007
United States.....	22*	35*	39
Alabama.....	13*	21*	26
Alaska.....	NA	34	38
Arizona.....	16*	28	31
Arkansas.....	14*	34	37
California.....	13*	28	30
Colorado.....	NA	39	41
Connecticut.....	31*	43	45
Delaware.....	NA	36*	40
District of Columbia.....	5*	10*	14
Florida.....	NA	37*	37
Georgia.....	17*	30	32
Hawaii.....	14*	27*	33
Idaho.....	20*	41	40
Illinois.....	20*	32*	36
Indiana.....	30*	38*	46
Iowa.....	26*	37*	43
Kansas.....	29*	47	51
Kentucky.....	17*	26*	31
Louisiana.....	14*	24	24
Maine.....	23*	39	42
Maryland.....	21*	38	40
Massachusetts.....	31*	49*	58
Michigan.....	28*	37	37
Minnesota.....	33*	47	51
Mississippi.....	9*	19	21
Missouri.....	23*	31*	38
Montana.....	24*	38*	44
Nebraska.....	24*	36	38
Nevada.....	16*	26*	30
New Hampshire.....	NA	47*	52
New Jersey.....	NA	46*	52
New Mexico.....	12*	19*	24
New York.....	21*	36*	43
North Carolina.....	25*	40	41
North Dakota.....	25*	40*	46
Ohio.....	25*	43	46
Oklahoma.....	16*	29	33
Oregon.....	23*	37	35
Pennsylvania.....	NA	41*	47
Rhode Island.....	22*	31*	34
South Carolina.....	18*	36	36
South Dakota.....	NA	40	41
Tennessee.....	18*	28	29
Texas.....	25*	40	40
Utah.....	23*	37	39
Vermont.....	29*	44*	49
Virginia.....	24*	40	42
Washington.....	NA	42	44
West Virginia.....	17*	25*	33
Wisconsin.....	NA	40*	47
Wyoming.....	25*	42	44
Puerto Rico.....	NA	NA	NA

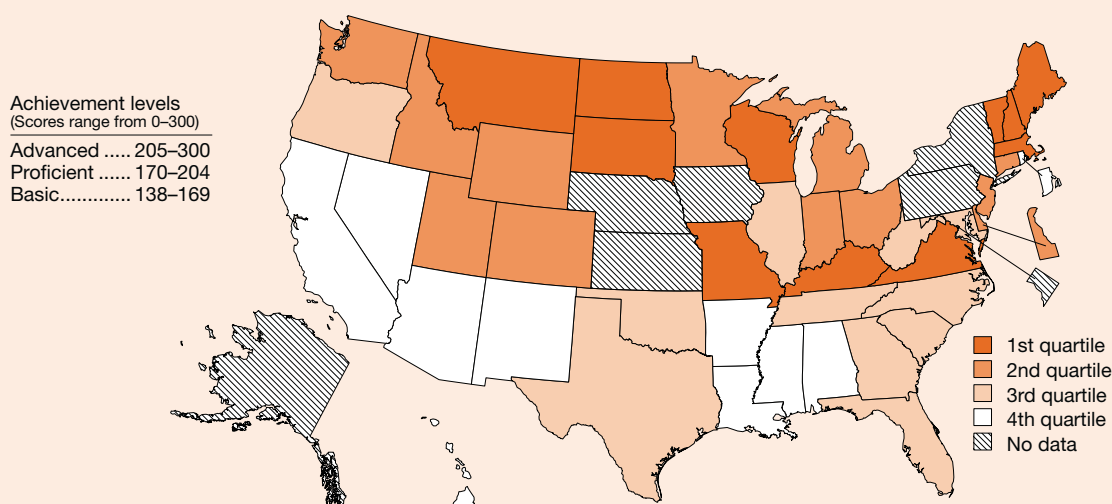
*significantly different ($p < .05$) from 2007 when only one jurisdiction or the nation is being examined;
 NA = not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Fourth Grade Science Performance

Figure 8-3
Average fourth grade science performance: 2005



1st quartile (161–158)	2nd quartile (157–152)	3rd quartile (151–148)	4th quartile (147–133)	No data
Kentucky † Maine † Massachusetts Missouri Montana † New Hampshire † North Dakota † South Dakota † Vermont † Virginia Wisconsin	Colorado Connecticut Delaware † Idaho † Indiana Michigan Minnesota New Jersey Ohio Utah Washington Wyoming †	Florida Georgia Illinois Maryland North Carolina Oklahoma † Oregon South Carolina † Tennessee Texas West Virginia †	Alabama † Arizona Arkansas † California Hawaii † Louisiana † Mississippi † Nevada † New Mexico † Rhode Island †	Alaska † District of Columbia Iowa Kansas † Nebraska † New York Pennsylvania

† EPSCoR state

NOTE: See figure 8-4 text for explanation of achievement levels.

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-3.

Findings

- In 2005, the nationwide average science score of fourth grade public school students was 149, an increase from 145 in 2000.
- Of the 36 states that participated in both the 2000 and 2005 science assessments, 20 reported increases in average scores of their public school fourth graders, but only 9 of these increases were statistically significant.
- Students performing at the 10th, 25th, and 50th percentiles demonstrated gains in science scores between 2000 and 2005, whereas students performing at the 75th and 90th percentiles showed no statistically significant change in average score.
- The states with the highest average science scores for fourth graders were concentrated in the northern United States. A number of EPSCoR states were included in this group.
- The gaps in science scores between white fourth graders and black or Hispanic fourth graders narrowed significantly between 2000 and 2005. The gender gap in fourth grade science scores, although much smaller, remained unchanged between 2000 and 2005.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in science for its fourth grade students in public schools. The NAEP science assessment is a federally authorized measure of student performance in which 44 states participated in 2005.

Student performance is presented in terms of average scores on a scale from 0 to 300. Higher scores indicate that fourth graders are demonstrating a stronger foundation for adult science competency. An average score designated as NA (not available) indicates that the state either did not participate in the assessment or did not have a representative sample of fourth graders that was large enough for reporting state-level results.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-3
Average fourth grade science performance, by state: 2000 and 2005
 (Score out of 300)

State	2000	2005
United States.....	145*	149
Alabama.....	143	142
Alaska.....	NA	NA
Arizona.....	140	139
Arkansas.....	145	147
California.....	129*	137
Colorado.....	NA	155
Connecticut.....	156	155
Delaware.....	NA	152
District of Columbia.....	NA	NA
Florida.....	NA	150
Georgia.....	142*	148
Hawaii.....	136*	142
Idaho.....	152	155
Illinois.....	150	148
Indiana.....	154	152
Iowa.....	159	NA
Kansas.....	NA	NA
Kentucky.....	152*	158
Louisiana.....	139	143
Maine.....	161	160
Maryland.....	145*	149
Massachusetts.....	161	160
Michigan.....	152	152
Minnesota.....	157	156
Mississippi.....	133	133
Missouri.....	157	158
Montana.....	160	160
Nebraska.....	150	NA
Nevada.....	142	140
New Hampshire.....	NA	161
New Jersey.....	NA	154
New Mexico.....	140	141
New York.....	148	NA
North Carolina.....	147	149
North Dakota.....	160	160
Ohio.....	155	157
Oklahoma.....	151	150
Oregon.....	148	151
Pennsylvania.....	NA	NA
Rhode Island.....	148	146
South Carolina.....	140*	148
South Dakota.....	NA	158
Tennessee.....	145*	150
Texas.....	145*	150
Utah.....	154	155
Vermont.....	160	160
Virginia.....	155*	161
Washington.....	NA	153
West Virginia.....	149	151
Wisconsin.....	NA	158
Wyoming.....	156	157
Puerto Rico.....	NA	NA

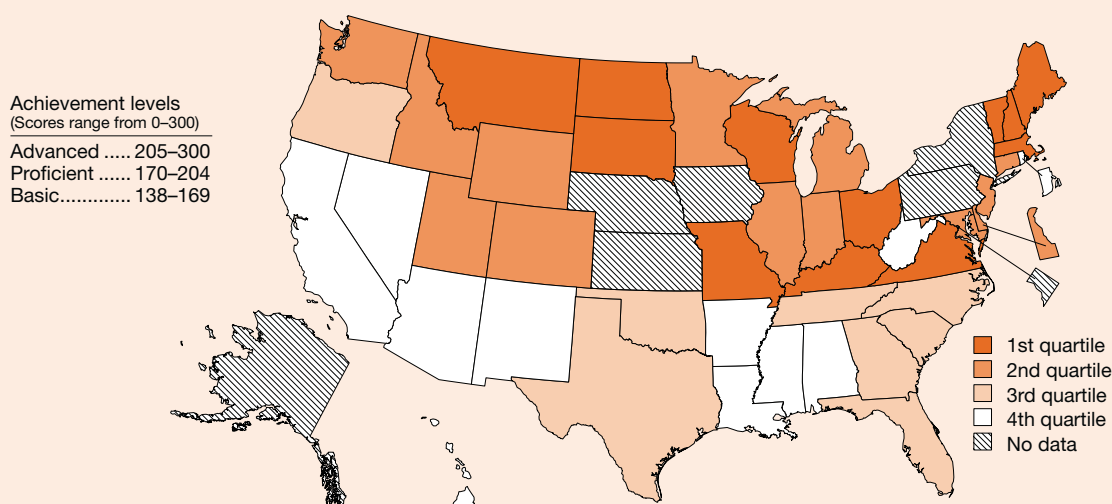
*significantly different from 2005 when only one jurisdiction or the nation is being examined;
 NA = not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Fourth Grade Science Proficiency

Figure 8-4
Students reaching proficiency in fourth grade science: 2005
 (Percent; scores of 170 and above indicate proficiency)



1st quartile (40%–35%)	2nd quartile (33%–27%)	3rd quartile (26%–25%)	4th quartile (24%–12%)	No data
Kentucky † Maine † Massachusetts Missouri Montana † New Hampshire † North Dakota † Ohio South Dakota † Vermont † Virginia Wisconsin	Colorado Connecticut Delaware † Idaho † Illinois Indiana Maryland Michigan Minnesota New Jersey Utah Washington Wyoming †	Florida Georgia North Carolina Oklahoma † Oregon South Carolina † Tennessee Texas	Alabama † Arizona Arkansas † California Hawaii † Louisiana † Mississippi † Nevada † New Mexico † Rhode Island † West Virginia †	Alaska † District of Columbia Iowa Kansas † Nebraska † New York Pennsylvania

† EPSCoR state

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-4.

Findings

- In 2005, 27% of fourth grade public school students nationwide performed at or above the proficient level in science, which is not significantly different from 26% in 2000.
- Of the 36 states that participated in both the 2000 and 2005 science assessments, only 4 states showed increases that were statistically significant.
- The states with the highest percentage of fourth graders who demonstrated science proficiency are located in the northern United States. A number of EPSCoR states were included in this group.
- Substantial differences in science proficiency exist between racial/ethnic groups of fourth graders. The gender gap is much smaller and remained unchanged between 2000 and 2005.

This indicator represents the proportion of a state's fourth grade students in public schools that has met or exceeded the proficiency standard in science.

The National Assessment of Educational Progress (NAEP) provides a federally authorized measure of student performance in science. The National Assessment Governing Board sets performance standards that provide a context for interpreting NAEP results. The standards define "proficiency" as well as performance levels that indicate greater ("advanced") and lesser ("basic") accomplishment. For the fourth grade, the proficient level (scores 170–204) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge, its application to real-world situations, and mastery of appropriate analytical skills. The advanced level (205–300) signifies superior performance. The basic level (138–169) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. A National Academy of Sciences panel evaluated the process used to establish the standards for the science assessment and urged that they be considered developmental and interpreted with caution.

Approximately 147,700 fourth grade students in 8,500 schools participated in the 2005 NAEP science assessment. A designation of NA (not available) indicates that the state either did not participate in the assessment or did not have a representative sample of fourth graders that was large enough for reporting state-level results.

Table 8-4
**Students reaching proficiency in fourth grade science, by state: 2000
 and 2005**
 (Percent)

State	2000	2005
United States.....	26	27
Alabama.....	22	21
Alaska.....	NA	NA
Arizona.....	22	18
Arkansas.....	23	24
California.....	13*	17
Colorado.....	NA	32
Connecticut.....	35	33
Delaware.....	NA	27
District of Columbia.....	NA	NA
Florida.....	NA	26
Georgia.....	23	25
Hawaii.....	16	19
Idaho.....	29	29
Illinois.....	31	27
Indiana.....	32	27
Iowa.....	36	NA
Kansas.....	NA	NA
Kentucky.....	28*	36
Louisiana.....	18	20
Maine.....	37	36
Maryland.....	24	27
Massachusetts.....	42	38
Michigan.....	32	30
Minnesota.....	34	33
Mississippi.....	13	12
Missouri.....	34	36
Montana.....	36	37
Nebraska.....	26	NA
Nevada.....	19	17
New Hampshire.....	NA	37
New Jersey.....	NA	32
New Mexico.....	17	18
New York.....	24	NA
North Carolina.....	23	25
North Dakota.....	36	36
Ohio.....	31	35
Oklahoma.....	26	25
Oregon.....	27	26
Pennsylvania.....	NA	NA
Rhode Island.....	25	23
South Carolina.....	20*	25
South Dakota.....	NA	35
Tennessee.....	24	26
Texas.....	23	25
Utah.....	31	33
Vermont.....	38	38
Virginia.....	32*	40
Washington.....	NA	28
West Virginia.....	24	24
Wisconsin.....	NA	35
Wyoming.....	31	32
Puerto Rico.....	NA	NA

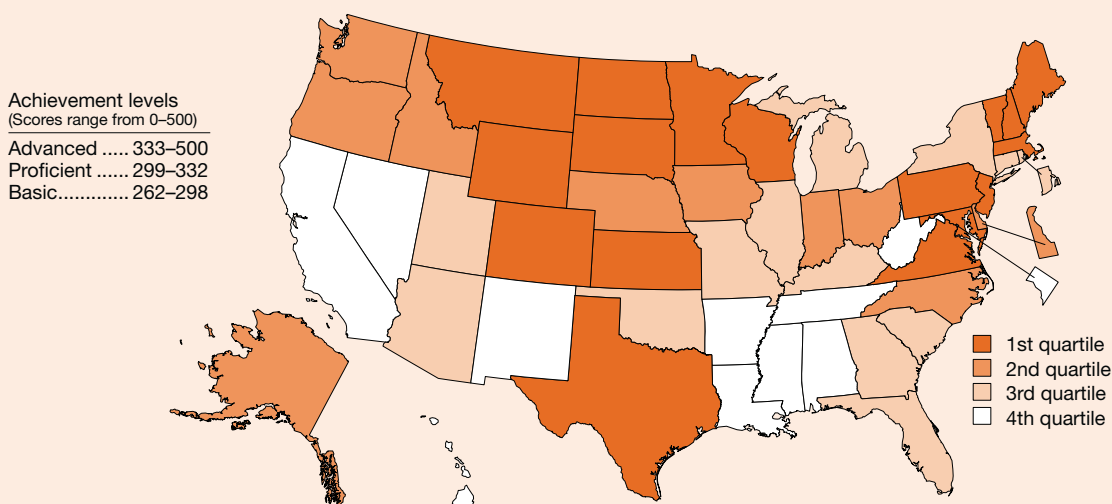
*significantly different from 2005 when only one jurisdiction or the nation is being examined;
 NA = not available

NOTE: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Eighth Grade Mathematics Performance

Figure 8-5
Average eighth grade mathematics performance: 2007



1st quartile (298–286)	2nd quartile (285–283)	3rd quartile (282–275)	4th quartile (274–248)
Colorado Kansas † Maine † Maryland Massachusetts Minnesota Montana † New Hampshire † New Jersey North Dakota † Pennsylvania South Dakota † Texas Vermont † Virginia Wisconsin Wyoming †	Alaska † Delaware † Idaho † Indiana Iowa Nebraska † North Carolina Ohio Oregon Washington	Arizona Connecticut Florida Georgia Illinois Kentucky † Michigan Missouri New York Oklahoma † Rhode Island † South Carolina † Utah	Alabama † Arkansas † California District of Columbia Hawaii † Louisiana † Mississippi † Nevada † New Mexico † Tennessee West Virginia †

† EPSCoR state

NOTE: See figure 8-6 text for explanation of achievement levels.

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-5.

Findings

- In 2007, the nationwide average mathematics score of eighth grade public school students was 280, a statistically significant increase from 272 in 2000.
- Of the 40 jurisdictions that participated in both the 2000 and 2007 mathematics assessments, 35 reported statistically significant increases.
- The entire eighth grade student sample, including students performing at the 10th, 25th, 50th, 75th, and 90th percentiles, demonstrated statistically significant gains in mathematics scores between 2000 and 2007.
- States with high average mathematics scores for eighth graders frequently included those in the New England and North Central regions of the United States. A number of EPSCoR states were included in this group.
- The gaps in mathematics scores between white eighth graders and black or Hispanic eighth graders narrowed significantly between 2000 and 2007. The gender gap in eighth grade mathematics scores, although much smaller, remained unchanged between 2000 and 2007.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in mathematics for its eighth grade students in public schools. The NAEP mathematics assessment is a federally authorized measure of student performance in which all 50 states and the District of Columbia participated in 2007.

Student performance is presented in terms of average scores on a scale from 0 to 500. Higher scores indicate that eighth graders are demonstrating a stronger foundation for adult mathematics competency. An average score designated as NA (not applicable) indicates that the state either did not participate in the assessment or did not have a representative sample of eighth graders that was large enough for reporting state-level results.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests taken with accommodations offered.

Table 8-5

Average eighth grade mathematics performance, by state: 2000, 2005, and 2007

(Score out of 500)

State	2000	2005	2007
Average EPSCoR state value	270	275	278
Average non-EPSCoR state value.....	274	280	282
United States.....	272 *	278*	280
Alabama.....	264	262	266
Alaska.....	NA	279*	283
Arizona.....	269 *	274	276
Arkansas.....	257 *	272	274
California.....	260 *	269	270
Colorado.....	NA	281*	286
Connecticut.....	281	281	282
Delaware.....	NA	281*	283
District of Columbia.....	235 *	245*	248
Florida.....	NA	274	277
Georgia.....	265 *	272	275
Hawaii.....	262 *	266*	269
Idaho.....	277 *	281*	284
Illinois.....	275 *	278	280
Indiana.....	281 *	282*	285
Iowa.....	NA	284	285
Kansas.....	283 *	284*	290
Kentucky.....	270 *	274*	279
Louisiana.....	259 *	268*	272
Maine.....	281 *	281*	286
Maryland.....	272 *	278*	286
Massachusetts.....	279 *	292*	298
Michigan.....	277	277	277
Minnesota.....	287 *	290	292
Mississippi.....	254 *	262	265
Missouri.....	271 *	276*	281
Montana.....	285	286	287
Nebraska.....	280 *	284	284
Nevada.....	265 *	270	271
New Hampshire.....	NA	285*	288
New Jersey.....	NA	284*	289
New Mexico.....	259 *	263*	268
New York.....	271 *	280	280
North Carolina.....	276 *	282	284
North Dakota.....	282 *	287*	292
Ohio.....	281 *	283	285
Oklahoma.....	270 *	271*	275
Oregon.....	280	282	284
Pennsylvania.....	NA	281*	286
Rhode Island.....	269 *	272*	275
South Carolina.....	265 *	281	282
South Dakota.....	NA	287	288
Tennessee.....	262 *	271*	274
Texas.....	273 *	281*	286
Utah.....	274 *	279	281
Vermont.....	281 *	287*	291
Virginia.....	275 *	284*	288
Washington.....	NA	285	285
West Virginia.....	266 *	269	270
Wisconsin.....	NA	285	286
Wyoming.....	276 *	282*	287
Puerto Rico.....	NA	NA	NA

*significantly different ($p < .05$) from 2007 when only one jurisdiction or the nation is being examined;

NA = not available;

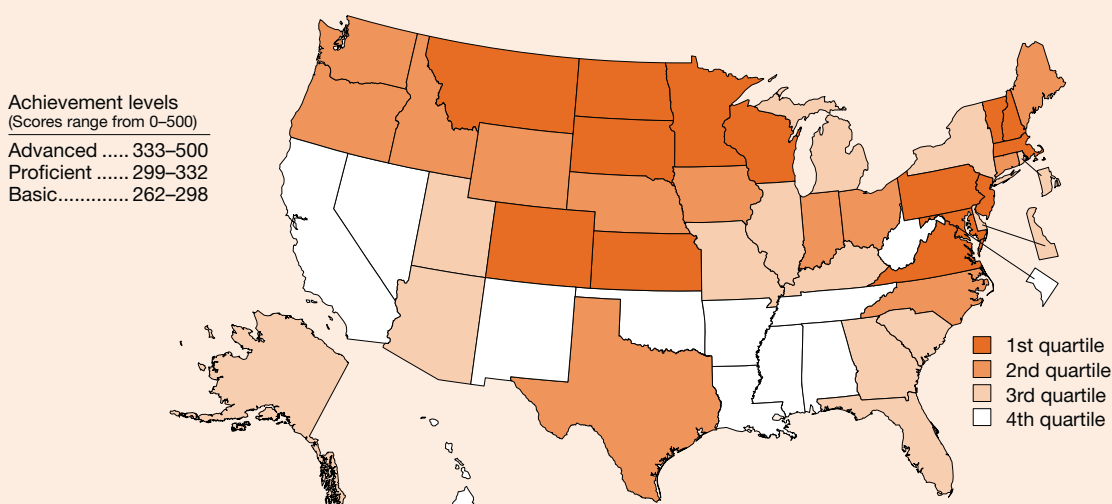
EPSCoR = Experimental Program to Stimulate Competitive Research

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 mathematics scores for public schools only. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCE: National Center for Education Statistics, NAEP (various years).

Eighth Grade Mathematics Proficiency

Figure 8-6
Students reaching proficiency in eighth grade mathematics: 2007
 (Percent; scores of 299 and above indicate proficiency)



1st quartile (51%–37%)	2nd quartile (36%–34%)	3rd quartile (32%–25%)	4th quartile (24%–8%)
Colorado	Connecticut	Alaska †	Alabama †
Kansas †	Idaho †	Arizona	Arkansas †
Maryland	Indiana	Delaware †	California
Massachusetts	Iowa	Florida	District of Columbia
Minnesota	Maine †	Georgia	Hawaii †
Montana †	Nebraska †	Illinois	Louisiana †
New Hampshire †	North Carolina	Kentucky †	Mississippi †
New Jersey	Ohio	Michigan	Nevada †
North Dakota †	Oregon	Missouri	New Mexico †
Pennsylvania	Texas	New York	Oklahoma †
South Dakota †	Washington	Rhode Island †	Tennessee
Vermont †	Wyoming †	South Carolina †	West Virginia †
Virginia		Utah	
Wisconsin			

† EPSCoR state

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-6.

Findings

- In 2007, 31% of eighth grade public school students nationwide performed at or above the proficient level in mathematics, which represents a significant increase from 25% in 2000.
- Of the 39 states that participated in both the 2000 and 2007 assessments, 30 showed statistically significant increases in mathematics proficiency among public school eighth graders in 2007.
- States with the highest percentages of eighth graders demonstrating proficiency in mathematics were located in the North Central and mid-Atlantic regions. A number of EPSCoR states were included in this group.
- Substantial differences in mathematics proficiency exist among racial/ethnic groups of eighth graders, and the gaps between whites and blacks or Hispanics increased slightly between 2000 and 2007. The gender gap in mathematics proficiency among eighth graders is much smaller and increased slightly between 2000 and 2007.

This indicator represents the proportion of a state's eighth grade students in public schools that has met or exceeded the proficiency standard in mathematics.

The National Assessment of Educational Progress (NAEP) provides a federally authorized measure of student performance in mathematics. The National Assessment Governing Board sets a performance standard that provides a context for interpreting NAEP results. The standards define “proficiency” as well as performance levels that indicate greater (“advanced”) and lesser (“basic”) accomplishment. For the eighth grade, the proficient level (scores 299–332) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge, its application to real-world situations, and mastery of appropriate analytical skills. The advanced level (333–500) signifies superior performance. The basic level (262–298) denotes partial mastery of knowledge and skills that are prerequisite for proficient work.

Approximately 153,000 eighth grade students in 6,900 schools participated in the 2007 NAEP mathematics assessment. A designation of NA (not available) indicates that the state either did not participate in the assessment or did not have a representative sample of eighth graders that was large enough for reporting state-level results.

Table 8-6

**Students reaching proficiency in eighth grade mathematics, by state:
2000, 2005, and 2007**

(Percent)

State	2000	2005	2007
United States.....	25*	28*	31
Alabama.....	16	15	18
Alaska.....	NA	29	32
Arizona.....	20*	26	26
Arkansas.....	13*	22	24
California.....	17*	22*	24
Colorado.....	NA	32*	37
Connecticut.....	33	35	35
Delaware.....	NA	30	31
District of Columbia.....	6	7	8
Florida.....	NA	26	27
Georgia.....	19*	23	25
Hawaii.....	16*	18*	21
Idaho.....	26*	30*	34
Illinois.....	26*	29	31
Indiana.....	29*	30*	35
Iowa.....	NA	34	35
Kansas.....	34*	34*	40
Kentucky.....	20*	23*	27
Louisiana.....	11*	16	19
Maine.....	30	30*	34
Maryland.....	27*	30*	37
Massachusetts.....	30*	43*	51
Michigan.....	28	29	29
Minnesota.....	39	43	43
Mississippi.....	9*	14	14
Missouri.....	21*	26*	30
Montana.....	36	36	38
Nebraska.....	30*	35	35
Nevada.....	18*	21	23
New Hampshire.....	NA	35	38
New Jersey.....	NA	36*	40
New Mexico.....	12*	14*	17
New York.....	24*	31	30
North Carolina.....	27*	32	34
North Dakota.....	30*	35*	41
Ohio.....	30*	34	35
Oklahoma.....	18	20	21
Oregon.....	31	33	35
Pennsylvania.....	NA	31*	38
Rhode Island.....	22*	24*	28
South Carolina.....	17*	30	32
South Dakota.....	NA	36	39
Tennessee.....	16*	21	23
Texas.....	24*	31*	35
Utah.....	25*	30	32
Vermont.....	31*	38*	41
Virginia.....	25*	33	37
Washington.....	NA	36	36
West Virginia.....	17	17	19
Wisconsin.....	NA	36	37
Wyoming.....	23*	29*	36
Puerto Rico.....	NA	NA	NA

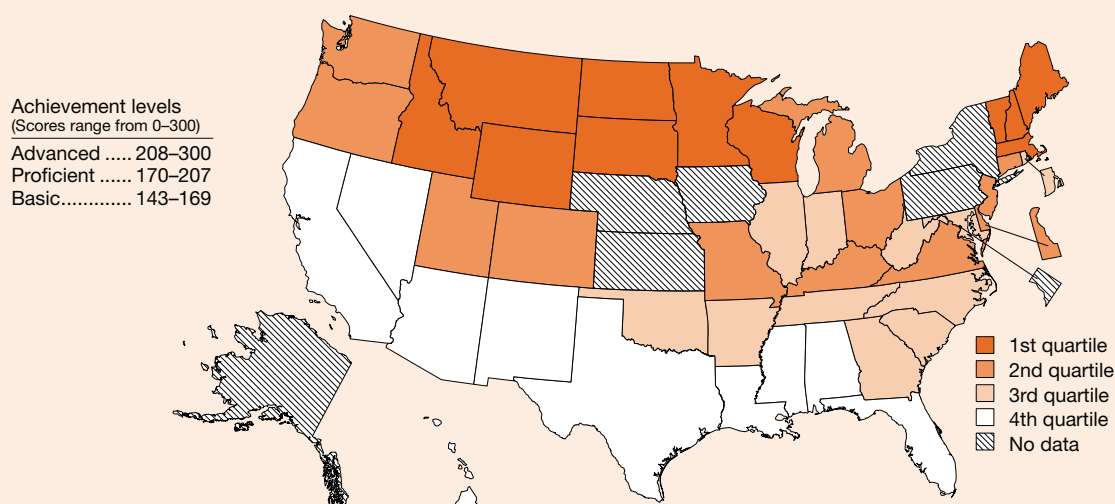
*significantly different ($p < .05$) from 2007 when only one jurisdiction or the nation is being examined;
NA = not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Eighth Grade Science Performance

Figure 8-7
Average eighth grade science performance: 2005



1st quartile (163–158)	2nd quartile (155–152)	3rd quartile (150–144)	4th quartile (143–132)	No data
Idaho † Maine † Massachusetts Minnesota Montana † New Hampshire † North Dakota † South Dakota † Vermont † Wisconsin Wyoming †	Colorado Connecticut Delaware † Kentucky † Michigan Missouri New Jersey Ohio Oregon Utah Virginia Washington	Arkansas † Georgia Illinois Indiana Maryland North Carolina Oklahoma † Rhode Island † South Carolina † Tennessee West Virginia †	Alabama † Arizona California Florida Hawaii † Louisiana † Mississippi † Nevada † New Mexico † Texas	Alaska † District of Columbia Iowa Kansas † Nebraska † New York Pennsylvania

† EPSCoR state

NOTE: See figure 8-8 text for explanation of achievement levels.

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-7.

Findings

- Of the 36 states that participated in both the 2000 and 2005 science assessments, 10 states reported 2005 average scores that were significantly higher than those in 2000 and 4 states reported average scores that were significantly lower.
- States with the highest average science scores for eighth graders were concentrated in the northern United States. A number of EPSCoR states were included in this group.
- The gaps in science scores between white eighth graders and black or Hispanic eighth graders did not change significantly between 2000 and 2005.

This indicator represents each state's average score on the National Assessment of Educational Progress (NAEP) in science for its eighth grade students in public schools. The NAEP science assessment is a federally authorized measure of student performance in which 44 states participated in 2005.

Student performance is presented in terms of average scores on a scale from 0 to 300. Higher scores indicate that eighth graders are demonstrating a stronger foundation for adult science competency. An average score designated as NA (not applicable) indicates that the state either did not participate in the assessment or did not have a representative sample of eighth graders that was large enough for reporting state-level results.

NAEP allows students with disabilities or limited English-language proficiency to use certain accommodations (e.g., extended time, individual testing, or small group testing). All data presented here represent scores from tests that offered these accommodations.

Table 8-7

Average eighth grade science performance, by state: 2000 and 2005

(Score out of 300)

State	2000	2005
United States.....	148	147
Alabama.....	143*	138
Alaska.....	NA	NA
Arizona.....	145*	140
Arkansas.....	142	144
California.....	129*	136
Colorado.....	NA	155
Connecticut.....	153	152
Delaware.....	NA	152
District of Columbia.....	NA	NA
Florida.....	NA	141
Georgia.....	142	144
Hawaii.....	130*	136
Idaho.....	158	158
Illinois.....	148	148
Indiana.....	154*	150
Iowa.....	NA	NA
Kansas.....	NA	NA
Kentucky.....	150*	153
Louisiana.....	134*	138
Maine.....	158	158
Maryland.....	146	145
Massachusetts.....	158*	161
Michigan.....	155	155
Minnesota.....	159	158
Mississippi.....	134	132
Missouri.....	154	154
Montana.....	164	162
Nebraska.....	158	NA
Nevada.....	141*	138
New Hampshire.....	NA	162
New Jersey.....	NA	153
New Mexico.....	139	138
New York.....	145	NA
North Carolina.....	145	144
North Dakota.....	159*	163
Ohio.....	159	155
Oklahoma.....	149	147
Oregon.....	154	153
Pennsylvania.....	NA	NA
Rhode Island.....	148	146
South Carolina.....	140*	145
South Dakota.....	NA	161
Tennessee.....	145	145
Texas.....	143	143
Utah.....	154	154
Vermont.....	159*	162
Virginia.....	151*	155
Washington.....	NA	154
West Virginia.....	146	147
Wisconsin.....	NA	158
Wyoming.....	156*	159
Puerto Rico.....	NA	NA

*significantly different from 2005 when only one jurisdiction or the nation is being examined;
NA = not available

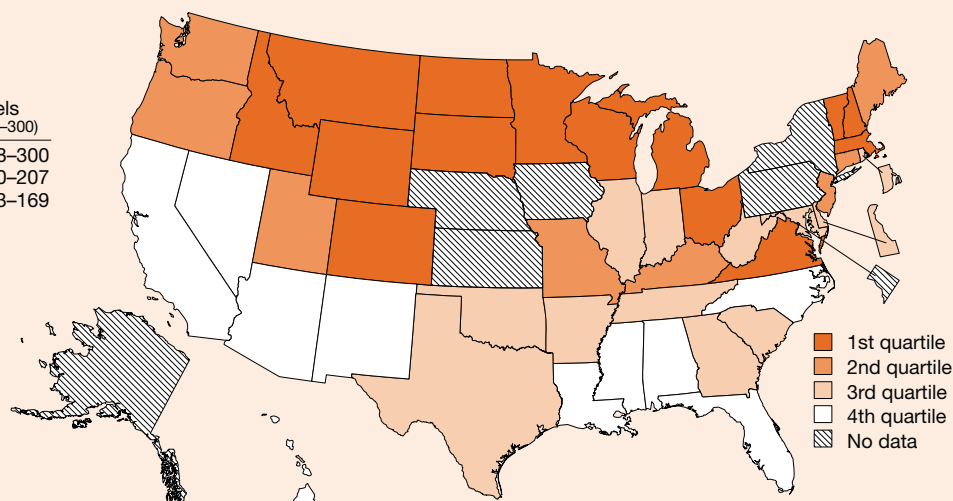
NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Eighth Grade Science Proficiency

Figure 8-8
Students reaching proficiency in eighth grade science: 2005
 (Percent; scores of 170 and above indicate proficiency)

Achievement levels
 (Scores range from 0–300)
 Advanced 208–300
 Proficient 170–207
 Basic 143–169



1st quartile (43%–35%)	2nd quartile (34%–31%)	3rd quartile (29%–23%)	4th quartile (22%–14%)	No data
Colorado Idaho [†] Massachusetts Michigan Minnesota Montana [†] New Hampshire [†] New Jersey [†] North Dakota [†] Ohio South Dakota [†] Vermont [†] Virginia Wisconsin Wyoming [†]	Connecticut Kentucky [†] Maine [†] Missouri New Jersey Oregon Utah Washington	Arkansas [†] Delaware [†] Georgia Illinois Indiana Maryland Oklahoma [†] Rhode Island [†] South Carolina [†] Tennessee Texas West Virginia [†]	Alabama [†] Arizona California Florida Hawaii [†] Louisiana [†] Mississippi [†] Nevada [†] New Mexico [†] North Carolina	Alaska [†] District of Columbia Iowa Kansas [†] Nebraska [†] New York Pennsylvania

[†] EPSCoR state

SOURCE: National Center for Education Statistics, National Assessment of Educational Progress. See table 8-8.

Findings

- Of the 36 states that participated in both the 2000 and 2005 science assessments for public school eighth graders, 4 states showed significant increases in science proficiency in 2005.
- Unlike math proficiency, science proficiency did not increase between 2000 and 2005.
- The states with the highest percentages of eighth graders who were proficient in science are concentrated in the northern United States. A number of EPSCoR states were included in this group.
- The nationwide percentage of students who performed at or above the proficient level in science was identical for fourth and eighth graders in 2005.

This indicator represents the proportion of a state's eighth grade students in public schools that has met or exceeded the proficiency standard in science.

The National Assessment of Educational Progress (NAEP) provides a federally authorized measure of student performance in science. The National Assessment Governing Board sets performance standards that provide a context for interpreting NAEP results. The standards define "proficiency" as well performance levels that indicate greater ("advanced") and lesser ("basic") accomplishment. For the eighth grade, the proficient level (scores 170–207) represents solid academic performance and demonstrates competency over challenging subject-matter knowledge, its application to real-world situations, and mastery of appropriate analytical skills. The advanced level (208–300) signifies superior performance. The basic level (143–169) denotes partial mastery of knowledge and skills that are prerequisite for proficient work. A National Academy of Sciences panel evaluated the process used to establish the standards for the science assessment and urged that they be considered developmental and interpreted with caution.

Approximately 143,400 eighth grade students in 6,400 schools participated in the 2005 NAEP science assessment. A designation of NA (not available) indicates that the state either did not participate in the assessment or did not have a representative sample of eighth graders that was large enough for reporting state-level results.

Table 8-8
Students reaching proficiency in eighth grade science, by state: 2000 and 2005
 (Percent)

State	2000	2005
United States.....	29	27
Alabama.....	23	19
Alaska.....	NA	NA
Arizona.....	23	20
Arkansas.....	22	23
California.....	14*	18
Colorado.....	NA	35
Connecticut.....	35	33
Delaware.....	NA	29
District of Columbia.....	NA	NA
Florida.....	NA	21
Georgia.....	23	25
Hawaii.....	14	15
Idaho.....	37	36
Illinois.....	29	27
Indiana.....	33	29
Iowa.....	NA	NA
Kansas.....	NA	NA
Kentucky.....	28	31
Louisiana.....	18	19
Maine.....	35	34
Maryland.....	27	26
Massachusetts.....	39	41
Michigan.....	35	35
Minnesota.....	41	39
Mississippi.....	15	14
Missouri.....	33	33
Montana.....	44	42
Nebraska.....	38	NA
Nevada.....	22	19
New Hampshire.....	NA	41
New Jersey.....	NA	33
New Mexico.....	20	18
New York.....	28	NA
North Carolina.....	25	22
North Dakota.....	38*	43
Ohio.....	39	35
Oklahoma.....	25	25
Oregon.....	34	32
Pennsylvania.....	NA	NA
Rhode Island.....	27	26
South Carolina.....	20	23
South Dakota.....	NA	41
Tennessee.....	24	25
Texas.....	23	23
Utah.....	34	33
Vermont.....	39	41
Virginia.....	29*	35
Washington.....	NA	33
West Virginia.....	24	23
Wisconsin.....	NA	39
Wyoming.....	34*	37
Puerto Rico.....	NA	NA

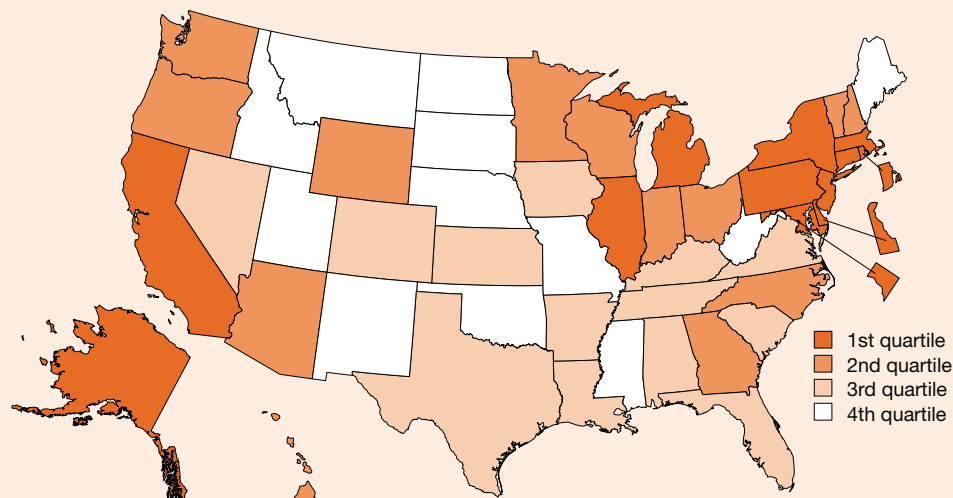
*significantly different from 2005 when only one jurisdiction or the nation is being examined;
 NA = not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).

Public School Teacher Salaries

Figure 8-9
Public school teacher salaries: 2007



1st quartile (\$63,640–\$54,658)	2nd quartile (\$51,937–\$45,941)	3rd quartile (\$45,833–\$42,816)	4th quartile (\$42,798–\$35,378)
Alaska †	Arizona	Alabama †	Idaho †
California	Georgia	Arkansas †	Maine †
Connecticut	Hawaii †	Colorado	Mississippi †
Delaware †	Indiana	Florida	Missouri
District of Columbia	Minnesota	Iowa	Montana †
Illinois	New Hampshire †	Kansas †	Nebraska †
Maryland	North Carolina	Kentucky †	New Mexico †
Massachusetts	Ohio	Louisiana †	North Dakota †
Michigan	Oregon	Nevada †	Oklahoma †
New Jersey	Vermont †	South Carolina †	South Dakota †
New York	Washington	Tennessee	Utah
Pennsylvania	Wisconsin	Texas	West Virginia †
Rhode Island †	Wyoming †	Virginia	

† EPSCoR state

SOURCE: National Center for Education Statistics, *Digest of Education Statistics*. See table 8-9.

Findings

- During the 2006–07 academic year, salaries for public school teachers nationwide averaged \$50,816, ranging from a state low of \$35,378 to a high of \$63,640.
- Between 1997 and 2007, average teacher salaries across the nation rose by 32% in terms of current dollars. Average teacher salaries remained essentially flat when expressed in constant dollars.
- The highest salaries for teachers are found in states with a high cost of living.
- Teachers in EPSCoR states tended to receive lower average salaries, placing them predominantly in the bottom half of the state rankings.
- High salaries for public school teachers do not necessarily correspond to high student achievement scores on the NAEP mathematics and science tests.

This indicator measures the average base salary of all full-time public school teachers. The year is the end date of the academic year. For example, 2007 data represent salaries for the 2006–07 academic year. The figures (given in current dollars) include salaries for teachers with varying amounts of teaching experience and various kinds and levels of formal education.

Public school teacher salaries may reflect a range of factors, including the value that the state places on primary and secondary education, the state's cost of living, the teachers' experience and education level, and the local supply and demand in the job market. Relatively low teacher salaries may hinder recruitment into the teaching profession.

Table 8-9
Public school teacher salaries, by state: 1997, 2002, and 2007
 (Dollars)

State	1997	2002	2007
United States.....	38,509	44,604	50,816
Alabama.....	32,549	39,268	43,389
Alaska.....	50,647	49,418	54,658
Arizona.....	33,350	36,966	45,941
Arkansas.....	29,975	35,389	44,245
California.....	43,474	53,870	63,640
Colorado.....	36,175	40,222	45,833
Connecticut.....	50,426	54,300	60,822
Delaware.....	41,436	48,363	54,680
District of Columbia.....	45,012	47,049	59,000
Florida.....	33,881	38,719	45,308
Georgia.....	36,042	44,073	49,905
Hawaii.....	35,842	41,951	51,922
Idaho.....	31,818	37,482	42,798
Illinois.....	42,679	50,000	58,246
Indiana.....	38,575	44,195	47,831
Iowa.....	33,275	38,230	43,130
Kansas.....	35,837	36,673	43,334
Kentucky.....	33,950	37,847	43,646
Louisiana.....	28,347	35,437	42,816
Maine.....	33,800	37,100	41,596
Maryland.....	41,148	46,200	56,927
Massachusetts.....	43,806	50,293	58,624
Michigan.....	44,251	52,037	54,895
Minnesota.....	37,975	43,330	49,634
Mississippi.....	27,720	32,800	40,182
Missouri.....	34,342	37,695	41,839
Montana.....	29,950	34,379	41,225
Nebraska.....	31,768	36,236	42,044
Nevada.....	37,340	41,524	45,342
New Hampshire.....	36,867	38,911	46,527
New Jersey.....	49,349	54,575	59,920
New Mexico.....	29,715	36,490	42,780
New York.....	49,560	53,081	58,537
North Carolina.....	31,225	42,959	46,410
North Dakota.....	27,711	31,709	38,822
Ohio.....	38,831	44,492	51,937
Oklahoma.....	29,270	35,412	42,379
Oregon.....	40,900	43,886	50,911
Pennsylvania.....	47,429	50,599	54,970
Rhode Island.....	43,019	49,758	55,956
South Carolina.....	32,659	38,943	44,133
South Dakota.....	26,764	31,295	35,378
Tennessee.....	33,789	38,554	43,816
Texas.....	32,644	39,293	44,897
Utah.....	31,750	37,414	40,566
Vermont.....	37,200	38,802	48,370
Virginia.....	35,837	41,262	44,727
Washington.....	37,860	43,483	47,882
West Virginia.....	33,159	36,751	40,531
Wisconsin.....	38,950	43,114	47,901
Wyoming.....	31,721	37,841	50,692
Puerto Rico.....	NA	NA	NA

NA = not available

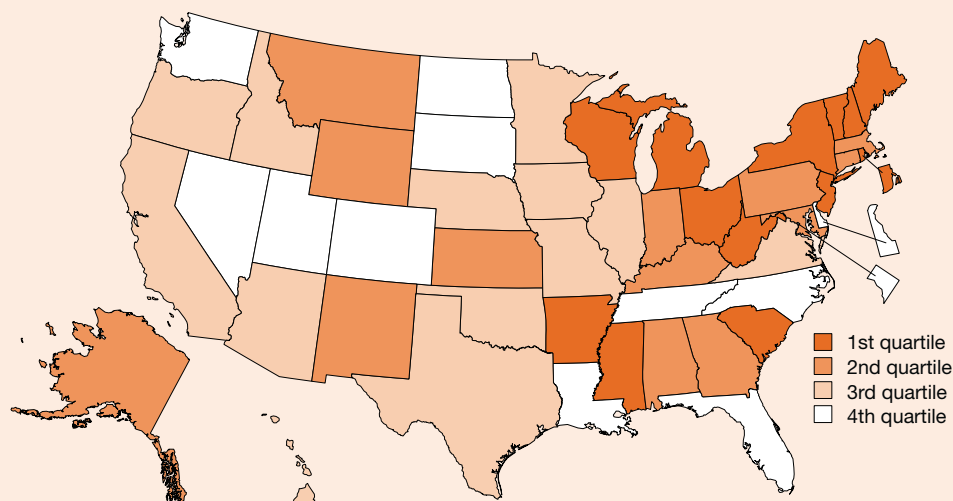
NOTES: National average for United States is reported value in *Digest of Education Statistics*. Average salaries reported in current dollars.

SOURCE: National Center for Education Statistics, *Digest of Education Statistics* (various years).

Elementary and Secondary Public School Current Expenditures as Share of Gross Domestic Product

Figure 8-10

Elementary and secondary public school current expenditures as share of gross domestic product: 2007



1st quartile (5.28%–3.87%)	2nd quartile (3.86%–3.54%)	3rd quartile (3.52%–3.14%)	4th quartile (3.09%–1.22%)
Arkansas † Maine † Michigan Mississippi † New Hampshire † New Jersey New York Ohio Rhode Island † South Carolina † Vermont † West Virginia † Wisconsin	Alabama † Alaska † Connecticut Georgia Indiana Kansas † Kentucky † Maryland Massachusetts Montana † New Mexico † Pennsylvania Wyoming †	Arizona California Hawaii † Idaho † Illinois Iowa Minnesota Missouri Nebraska † Oklahoma † Oregon Texas Virginia	Colorado Delaware † District of Columbia Florida Louisiana † Nevada † North Carolina North Dakota † South Dakota † Tennessee Utah Washington

† EPSCoR state

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, National Public Education Financial Survey; and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-10.

Findings

- The 2007 national average for spending on elementary and secondary education was 3.48% of the GDP, a slight increase from 3.28% in 1997. Among individual states, the value for this indicator ranged from 2.34% to 5.28% of the state's GDP in 2007, indicating that some states were directing a much higher percentage of their resources toward elementary and secondary education.
- Spending for elementary and secondary public education as a share of the state's GDP decreased in 16 states and the District of Columbia during the 1997–2007 period.
- States that spent the highest percentage of their GDP on elementary and secondary education are located in the eastern region of the United States. A number of EPSCoR states were included in this group.

This indicator measures the relative amount of resources that local, state, and federal governments direct toward public education in prekindergarten through grade 12. It is calculated by dividing the current expenditures of elementary and secondary public schools by the state's gross domestic product (GDP). Current expenditures include instruction and instruction-related costs, student support service, administration, and operations and exclude funds for school construction and other capital outlays, debt service, and programs outside of public elementary and secondary education. State and local support represent the largest sources of funding for elementary and secondary education.

Financial data on public elementary and secondary education are reported by the National Center for Education Statistics, Department of Education. These data are part of the National Public Education Financial Survey and are included in the 2007 Common Core of Data, a comprehensive annual national statistical database that covers approximately 97,000 public elementary and secondary schools and 18,000 school districts in the United States. Current expenditures are expressed in actual dollars and their data year is the end date of the academic year. For example, current expenditure data for 2007 represent expenditures for the 2006–07 academic year. GDP data refer to the 2007 calendar year.

Table 8-10

Elementary and secondary public school current expenditures as share of gross domestic product, by state: 1997, 2002, and 2007

State	Public school expenditures (current \$thousands)			State GDP (current \$millions)			School expenditures/ GDP (%)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	270,151,583	368,499,139	476,825,866	8,237,996	10,398,403	13,715,741	3.28	3.54	3.48
Alabama.....	3,436,406	4,444,390	6,245,031	102,433	123,805	164,524	3.35	3.59	3.80
Alaska.....	1,069,379	1,284,854	1,634,316	25,028	29,186	44,887	4.27	4.40	3.64
Arizona.....	3,527,473	5,499,645	7,815,720	127,370	171,942	245,952	2.77	3.20	3.18
Arkansas.....	2,074,113	2,822,877	3,997,701	59,182	72,203	95,116	3.50	3.91	4.20
California.....	29,909,168	46,265,544	57,352,599	1,019,150	1,340,446	1,801,762	2.93	3.45	3.18
Colorado.....	3,577,211	5,151,003	6,579,053	132,881	182,154	235,848	2.69	2.83	2.79
Connecticut.....	4,522,716	6,031,062	7,855,459	137,698	166,073	212,252	3.28	3.63	3.70
Delaware.....	788,715	1,072,875	1,437,707	35,488	45,324	61,545	2.22	2.37	2.34
District of Columbia.....	632,952	912,432	1,130,006	50,368	67,717	92,516	1.26	1.35	1.22
Florida.....	12,018,676	15,535,864	22,887,024	391,451	522,719	741,861	3.07	2.97	3.09
Georgia.....	7,230,405	10,853,496	14,828,715	237,468	306,680	391,241	3.04	3.54	3.79
Hawaii.....	1,057,069	1,348,381	1,998,913	37,546	43,476	62,019	2.82	3.10	3.22
Idaho.....	1,090,597	1,481,803	1,777,491	28,510	36,651	52,110	3.83	4.04	3.41
Illinois.....	11,720,249	16,480,787	20,326,591	403,982	487,129	617,409	2.90	3.38	3.29
Indiana.....	6,055,055	7,704,547	9,497,077	168,115	205,015	249,229	3.60	3.76	3.81
Iowa.....	2,885,943	3,565,796	4,231,932	81,923	97,356	129,911	3.52	3.66	3.26
Kansas.....	2,568,525	3,450,923	4,339,477	72,071	89,573	116,986	3.56	3.85	3.71
Kentucky.....	3,382,062	4,268,608	5,424,621	105,725	120,726	152,099	3.20	3.54	3.57
Louisiana.....	3,747,507	4,802,565	6,040,368	113,261	134,308	207,407	3.31	3.58	2.91
Maine.....	1,351,500	1,812,798	2,258,764	30,873	38,625	48,021	4.38	4.69	4.70
Maryland.....	5,529,309	7,480,723	10,198,084	154,139	204,120	264,426	3.59	3.66	3.86
Massachusetts.....	6,846,610	9,957,292	12,453,611	221,827	284,386	352,178	3.09	3.50	3.54
Michigan.....	11,686,124	14,975,150	17,013,259	298,994	349,837	379,934	3.91	4.28	4.48
Minnesota.....	5,087,353	6,586,559	8,060,410	155,938	198,558	252,472	3.26	3.32	3.19
Mississippi.....	2,035,675	2,642,116	3,692,358	57,954	68,144	87,652	3.51	3.88	4.21
Missouri.....	4,775,931	6,491,603	7,957,705	158,203	188,351	229,027	3.02	3.45	3.47
Montana.....	902,252	1,073,005	1,320,112	19,142	23,560	34,266	4.71	4.55	3.85
Nebraska.....	1,707,455	2,206,946	2,825,608	50,542	59,934	80,360	3.38	3.68	3.52
Nevada.....	1,434,395	2,169,000	3,311,471	59,917	81,274	129,314	2.39	2.67	2.56
New Hampshire.....	1,173,958	1,641,378	2,246,692	36,569	46,188	57,820	3.21	3.55	3.89
New Jersey.....	11,771,941	15,822,609	22,448,262	300,910	372,754	461,295	3.91	4.24	4.87
New Mexico.....	1,557,376	2,204,165	2,904,474	47,442	52,510	75,192	3.28	4.20	3.86
New York.....	24,237,291	32,218,975	43,679,908	654,750	821,577	1,105,020	3.70	3.92	3.95
North Carolina.....	5,964,939	8,550,546	11,248,336	228,864	296,435	390,467	2.61	2.88	2.88
North Dakota.....	577,498	711,437	838,221	16,316	19,880	28,518	3.54	3.58	2.94
Ohio.....	10,948,074	14,774,065	18,251,361	332,124	389,773	462,506	3.30	3.79	3.95
Oklahoma.....	2,990,044	3,875,547	4,750,536	78,019	97,170	136,374	3.83	3.99	3.48
Oregon.....	3,184,100	4,214,512	5,039,632	96,591	117,131	158,268	3.30	3.60	3.18
Pennsylvania.....	12,820,704	15,550,975	20,404,304	343,368	423,110	533,212	3.73	3.68	3.83
Rhode Island.....	1,151,888	1,533,455	2,039,633	28,506	36,909	46,699	4.04	4.15	4.37
South Carolina.....	3,296,661	4,744,809	6,023,043	97,397	121,582	151,703	3.38	3.90	3.97
South Dakota.....	627,109	819,296	977,006	19,804	26,416	35,211	3.17	3.10	2.77
Tennessee.....	4,145,380	5,511,452	6,975,099	153,405	191,525	245,162	2.70	2.88	2.85
Texas.....	20,167,238	28,191,128	36,105,784	599,492	783,480	1,148,531	3.36	3.60	3.14
Utah.....	1,822,725	2,374,702	2,987,810	56,590	72,665	105,574	3.22	3.27	2.83
Vermont.....	718,092	992,149	1,300,149	15,167	19,553	24,627	4.73	5.07	5.28
Virginia.....	6,343,766	8,718,554	12,465,858	211,921	285,759	384,132	2.99	3.05	3.25
Washington.....	5,587,808	7,103,721	8,752,007	178,334	231,463	310,279	3.13	3.07	2.82
West Virginia.....	1,847,560	2,219,013	2,742,344	38,795	45,032	57,877	4.76	4.93	4.74
Wisconsin.....	5,975,122	7,592,176	9,029,660	151,549	188,600	233,406	3.94	4.03	3.87
Wyoming.....	591,488	761,830	1,124,564	14,904	19,619	31,544	3.97	3.88	3.57
Puerto Rico.....	1,796,077	2,152,724	3,268,200	48,187	71,624	NA	3.73	3.01	NA

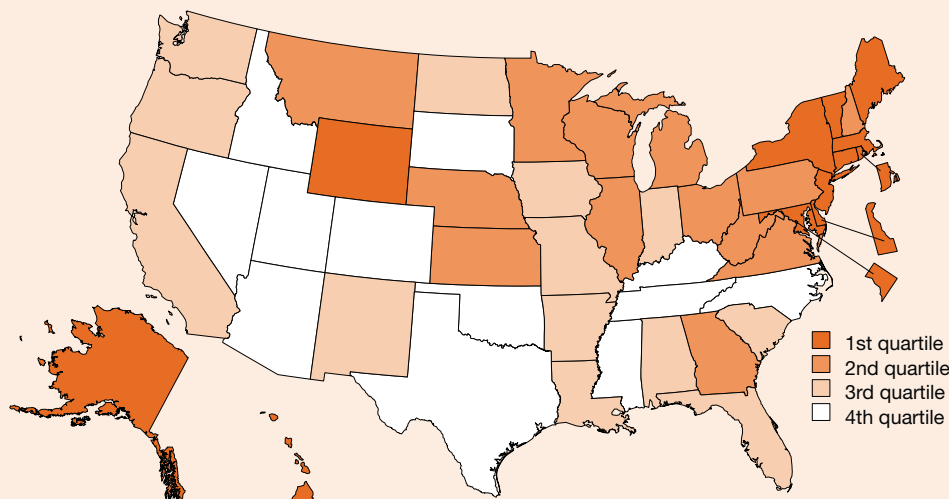
NA = not available

GDP = gross domestic product

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, National Public Education Financial Survey (various years); Bureau of Economic Analysis, Gross Domestic Product data (various years); and Government of Puerto Rico, Office of the Governor (various years).

Current Expenditures per Pupil for Elementary and Secondary Public Schools

Figure 8-11
Current expenditures per pupil for elementary and secondary public schools: 2007



1st quartile (\$16,163–\$11,060)	2nd quartile (\$11,037–\$9,102)	3rd quartile (\$9,080–\$8,391)	4th quartile (\$8,286–\$5,706)
Alaska †	Georgia	Alabama †	Arizona
Connecticut	Illinois	Arkansas †	Colorado
Delaware †	Kansas †	California	Idaho †
District of Columbia	Michigan	Florida	Kentucky †
Hawaii †	Minnesota	Indiana	Mississippi †
Maine †	Montana †	Iowa	Nevada †
Maryland	Nebraska †	Louisiana †	North Carolina
Massachusetts	New Hampshire †	Missouri	Oklahoma †
New Jersey	Ohio	New Mexico †	South Dakota †
New York	Pennsylvania	North Dakota †	Tennessee
Rhode Island †	Virginia	Oregon	Texas
Vermont †	West Virginia †	South Carolina †	Utah
Wyoming †	Wisconsin	Washington	

† EPSCoR state

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, State Nonfiscal Survey of Public Elementary/Secondary Education; and National Public Education Financial Survey. See table 8-11.

Findings

- Per-pupil spending on day-to-day operations grew nationwide from \$5,923 in 1997 to \$9,683 in 2007, an increase of 63% in unadjusted dollars. This was equivalent to an increase of approximately 30% after adjusting for inflation.
- In 2007, all states showed substantial increases in per-pupil spending relative to 1997, and only 1 state did not exceed the 1997 national average, compared with 31 states in 1997.
- Per-pupil spending in individual states varied widely, ranging from a high of \$16,163 to a low of \$5,706 in 2007.
- No direct correlation can be made between spending and academic performance. Several states that ranked in the lower two quartiles of this indicator ranked in the upper quartiles of the National Assessment of Educational Progress indicators

This indicator measures the amount that local, state, and federal governments spend on elementary and secondary education, adjusted for the size of the student body. It is calculated by dividing the current expenditures over the entire academic year for prekindergarten through grade 12 by the number of students in those grades in public schools. Current expenditures represent amounts spent on the day-to-day operations of schools and school districts. They include expenditures for instruction and instruction-related costs, student support services, administration, and operations and exclude funds for school construction and other capital outlays, debt service, and programs outside of public elementary and secondary education.

During the 2006–07 school year, 65.8% of current expenses were used for instructional costs, 5.3% for student support services, 10.8% for administrative costs, and 18.0% for operational costs.

The number of pupils enrolled in prekindergarten through grade 12 is determined during the fall of the academic year. All figures represent actual spending and have not been adjusted for inflation. The year is the end date of the academic year. For example, data for 2007 represent costs for the 2006–07 academic year.

Current expenditures per pupil do not take into account the cost of living in a state, which could affect the amount of goods and services that can be purchased.

Table 8-11

Current expenditures per pupil for elementary and secondary public schools, by state: 1997, 2002, and 2007

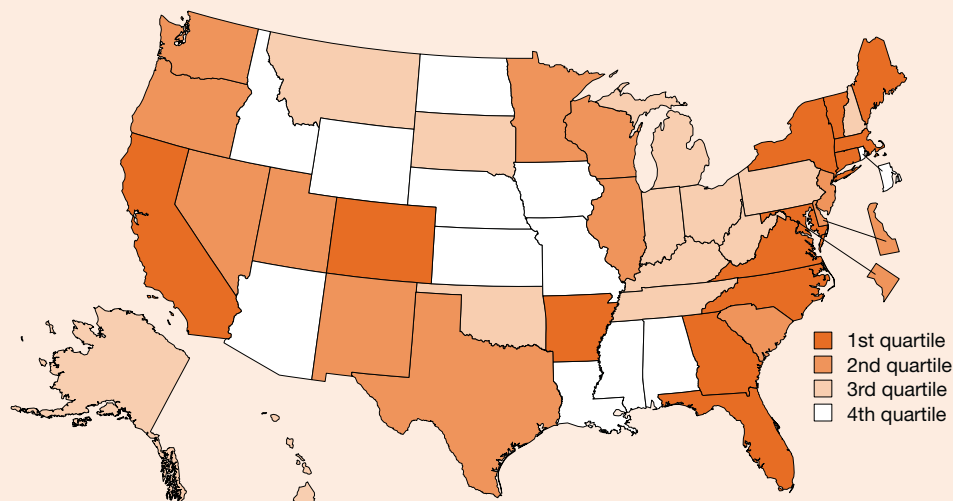
State	Public school expenditures (\$thousands)			Student enrollment			Per-pupil expenditures (\$)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	270,151,583	368,499,139	476,825,866	45,611,046	47,647,972	49,245,840	5,923	7,734	9,683
Alabama.....	3,436,406	4,444,390	6,245,031	747,932	737,190	743,632	4,595	6,029	8,398
Alaska.....	1,069,379	1,284,854	1,634,316	129,919	134,358	132,608	8,231	9,563	12,324
Arizona.....	3,527,473	5,499,645	7,815,720	799,250	922,180	1,065,082	4,413	5,964	7,338
Arkansas.....	2,074,113	2,822,877	3,997,701	457,349	449,805	476,409	4,535	6,276	8,391
California.....	29,909,168	46,265,544	57,352,599	5,686,198	6,223,821	6,406,821	5,260	7,434	8,952
Colorado.....	3,577,211	5,151,003	6,579,053	673,438	742,145	794,026	5,312	6,941	8,286
Connecticut.....	4,522,716	6,031,062	7,855,459	527,129	570,228	575,100	8,580	10,577	13,659
Delaware.....	788,715	1,072,875	1,437,707	110,549	115,560	122,254	7,135	9,284	11,760
District of Columbia...	632,952	912,432	1,130,006	78,648	75,392	72,850	8,048	12,103	15,511
Florida.....	12,018,676	15,535,864	22,887,024	2,242,212	2,500,478	2,671,513	5,360	6,213	8,567
Georgia.....	7,230,405	10,853,496	14,828,715	1,346,761	1,470,634	1,629,157	5,369	7,380	9,102
Hawaii.....	1,057,069	1,348,381	1,998,913	187,653	184,546	180,728	5,633	7,306	11,060
Idaho.....	1,090,597	1,481,803	1,777,491	245,252	246,521	267,380	4,447	6,011	6,648
Illinois.....	11,720,249	16,480,787	20,326,591	1,973,040	2,071,391	2,118,276	5,940	7,956	9,596
Indiana.....	6,055,055	7,704,547	9,497,077	982,876	996,133	1,045,940	6,161	7,734	9,080
Iowa.....	2,885,943	3,565,796	4,231,932	502,941	485,932	481,368	5,738	7,338	8,791
Kansas.....	2,568,525	3,450,923	4,339,477	466,293	470,205	469,506	5,508	7,339	9,243
Kentucky.....	3,382,062	4,268,608	5,424,621	656,089	654,363	683,173	5,155	6,523	7,940
Louisiana.....	3,747,507	4,802,565	6,040,368	793,296	731,328	675,851	4,724	6,567	8,937
Maine.....	1,351,500	1,812,798	2,258,764	213,593	205,586	193,986	6,327	8,818	11,644
Maryland.....	5,529,309	7,480,723	10,198,084	818,583	860,640	851,640	6,755	8,692	11,975
Massachusetts.....	6,846,610	9,957,292	12,453,611	933,898	973,140	968,661	7,331	10,232	12,857
Michigan.....	11,686,124	14,975,150	17,013,259	1,685,714	1,730,668	1,714,709	6,932	8,653	9,922
Minnesota.....	5,087,353	6,586,559	8,060,410	847,204	851,384	840,565	6,005	7,736	9,589
Mississippi.....	2,035,675	2,642,116	3,692,358	503,967	493,507	495,026	4,039	5,354	7,459
Missouri.....	4,775,931	6,491,603	7,957,705	900,517	909,792	899,426	5,304	7,135	8,848
Montana.....	902,252	1,073,005	1,320,112	164,627	151,947	143,624	5,481	7,062	9,191
Nebraska.....	1,707,455	2,206,946	2,825,608	291,967	285,095	280,647	5,848	7,741	10,068
Nevada.....	1,434,395	2,169,000	3,311,471	282,131	356,814	424,240	5,084	6,079	7,806
New Hampshire.....	1,173,958	1,641,378	2,246,692	198,308	206,847	203,551	5,920	7,935	11,037
New Jersey.....	11,771,941	15,822,609	22,448,262	1,227,832	1,341,656	1,388,850	9,588	11,793	16,163
New Mexico.....	1,557,376	2,204,165	2,904,474	332,632	320,260	328,220	4,682	6,882	8,849
New York.....	24,237,291	32,218,975	43,679,908	2,843,131	2,872,132	2,809,649	8,525	11,218	15,546
North Carolina.....	5,964,939	8,550,546	11,248,336	1,210,108	1,315,363	1,427,880	4,929	6,501	7,878
North Dakota.....	577,498	711,437	838,221	120,123	106,047	96,670	4,808	6,709	8,671
Ohio.....	10,948,074	14,774,065	18,251,361	1,844,698	1,830,985	1,836,096	5,935	8,069	9,940
Oklahoma.....	2,990,044	3,875,547	4,750,536	620,695	622,139	639,391	4,817	6,229	7,430
Oregon.....	3,184,100	4,214,512	5,039,632	537,854	551,480	562,574	5,920	7,642	8,958
Pennsylvania.....	12,820,704	15,550,975	20,404,304	1,804,256	1,821,627	1,871,060	7,106	8,537	10,905
Rhode Island.....	1,151,888	1,533,455	2,039,633	151,324	158,046	151,612	7,612	9,703	13,453
South Carolina.....	3,296,661	4,744,809	6,023,043	652,816	676,198	703,119	5,050	7,017	8,566
South Dakota.....	627,109	819,296	977,006	143,331	127,542	121,158	4,375	6,424	8,064
Tennessee.....	4,145,380	5,511,452	6,975,099	904,818	924,899	978,368	4,581	5,959	7,129
Texas.....	20,167,238	28,191,128	36,105,784	3,828,975	4,163,447	4,599,509	5,267	6,771	7,850
Utah.....	1,822,725	2,374,702	2,987,810	481,812	484,677	523,586	3,783	4,900	5,706
Vermont.....	718,092	992,149	1,300,149	106,341	101,179	95,399	6,753	9,806	13,629
Virginia.....	6,343,766	8,718,554	12,465,858	1,096,093	1,163,091	1,220,440	5,788	7,496	10,214
Washington.....	5,587,808	7,103,721	8,752,007	974,504	1,009,200	1,026,774	5,734	7,039	8,524
West Virginia.....	1,847,560	2,219,013	2,742,344	304,052	282,885	281,939	6,076	7,844	9,727
Wisconsin.....	5,975,122	7,592,176	9,029,660	879,259	879,361	871,027	6,796	8,634	10,367
Wyoming.....	591,488	761,830	1,124,564	99,058	88,128	84,770	5,971	8,645	13,266
Puerto Rico.....	1,796,077	2,152,724	3,268,200	618,861	604,177	544,138	2,902	3,563	6,006

SOURCES: National Center for Education Statistics (NCES), NCES Common Core of Data, State Nonfiscal Survey of Public Elementary/Secondary Education (various years); and National Public Education Financial Survey (various years).

Share of Public High School Students Taking Advanced Placement Exams

Figure 8-12

Share of public high school students taking Advanced Placement Exams: 2008



1st quartile (37.2%–28.4%)	2nd quartile (27.6%–21.2%)	3rd quartile (21.1%–15.3%)	4th quartile (15.0%–8.4%)
Arkansas † California Colorado Connecticut Florida Georgia Maine † Maryland Massachusetts New York North Carolina Vermont † Virginia	Delaware † District of Columbia Illinois Minnesota Nevada † New Jersey New Mexico † Oregon South Carolina † Texas Utah Washington Wisconsin	Alaska † Hawaii † Indiana Kentucky † Michigan Montana † New Hampshire † Ohio Oklahoma † Pennsylvania South Dakota † Tennessee West Virginia †	Alabama † Arizona Idaho † Iowa Kansas † Louisiana † Mississippi † Missouri Nebraska † North Dakota † Rhode Island † Wyoming †

† EPSCoR state

SOURCE: College Board, Advanced Placement Report to the Nation. See table 8-12.

Findings

- Nationwide, the percentage of public school students who took an AP Exam rose from 15.9% of the class of 2000 to 25.0% of the class of 2008.
- The percentage of public school students taking an AP Exam varied greatly among states and ranged from 8.4% to 37.2% of the class of 2008. Thirty-six states and the District of Columbia exceeded the 2000 national average in 2008, compared with 15 states and the District of Columbia that exceeded the national average in 2000.
- AP participation levels were higher for all jurisdictions in 2008 than in 2000. Arkansas showed the largest increase, with the class of 2008 exceeding the participation of the class of 2000 by more than 25 percentage points. Many of the EPSCoR states had the lowest AP Exam participation rates.

Participation in the Advanced Placement (AP) program provides a measure of the extent to which a rigorous curriculum is available to and used by high school students. This indicator measures the percentage of students in the graduating class who have taken one or more AP Exams. This percentage is calculated by dividing the number of students in the graduating class who have taken at least one AP Exam by the total number of students in the graduating class.

Throughout the United States, nearly 758,000 public school students from the class of 2008 took nearly 2.2 million AP Exams during their high school careers. Generally, students who take AP Exams have completed a rigorous course of study in a specific subject area in high school with the expectation of obtaining college credit or advanced placement. AP Exams were taken most frequently in U.S. history, English literature and composition, English language and composition, calculus AB, and U.S. government and politics.

In the 50 states and the District of Columbia, students from the class of 2008 attended 12,323 U.S. public schools that participated in the AP program. This represented 79% of the public high schools in the United States. These schools make an average of 10 different AP courses available to their students.

Table 8-12

Share of public high school students taking Advanced Placement Exams, by state: 2000, 2004, and 2008

(Percent)

State	2000	2004	2008
United States.....	15.9	20.9	25.0
Alabama.....	7.2	8.8	13.5
Alaska.....	15.4	16.7	20.3
Arizona.....	11.3	12.9	14.0
Arkansas.....	8.1	13.0	33.3
California.....	22.2	28.5	30.8
Colorado.....	18.6	25.3	30.5
Connecticut.....	19.1	24.6	29.0
Delaware.....	13.3	19.6	26.8
District of Columbia.....	17.3	23.1	26.3
Florida.....	22.7	33.5	34.0
Georgia.....	17.2	21.5	30.3
Hawaii.....	10.6	14.8	16.6
Idaho.....	9.6	12.5	14.5
Illinois.....	13.4	18.6	22.8
Indiana.....	11.9	15.5	19.8
Iowa.....	6.9	10.0	12.6
Kansas.....	7.0	9.2	13.7
Kentucky.....	10.6	15.5	19.8
Louisiana.....	3.2	5.0	8.4
Maine.....	14.8	19.9	31.9
Maryland.....	20.2	29.2	37.2
Massachusetts.....	19.6	25.3	29.2
Michigan.....	13.9	16.8	20.2
Minnesota.....	13.4	16.4	22.5
Mississippi.....	5.6	7.0	12.6
Missouri.....	5.5	8.1	10.8
Montana.....	10.1	13.0	15.9
Nebraska.....	5.0	6.3	10.7
Nevada.....	15.1	19.8	24.6
New Hampshire.....	13.3	16.0	21.1
New Jersey.....	17.9	21.3	24.2
New Mexico.....	11.1	17.0	21.5
New York.....	27.3	32.4	35.4
North Carolina.....	19.7	26.9	28.4
North Dakota.....	5.9	8.4	10.4
Ohio.....	11.3	15.2	17.6
Oklahoma.....	9.5	17.0	20.2
Oregon.....	10.5	13.6	21.2
Pennsylvania.....	12.4	14.9	17.9
Rhode Island.....	10.7	12.1	14.9
South Carolina.....	17.7	19.2	23.1
South Dakota.....	9.6	13.5	16.0
Tennessee.....	10.4	13.6	16.5
Texas.....	16.6	23.2	27.5
Utah.....	24.5	27.6	27.6
Vermont.....	16.6	21.2	29.0
Virginia.....	25.0	28.1	34.1
Washington.....	11.5	18.5	25.0
West Virginia.....	8.4	13.0	15.3
Wisconsin.....	15.2	20.0	24.2
Wyoming.....	6.1	11.2	15.0
Puerto Rico.....	NA	NA	NA

NA = not available

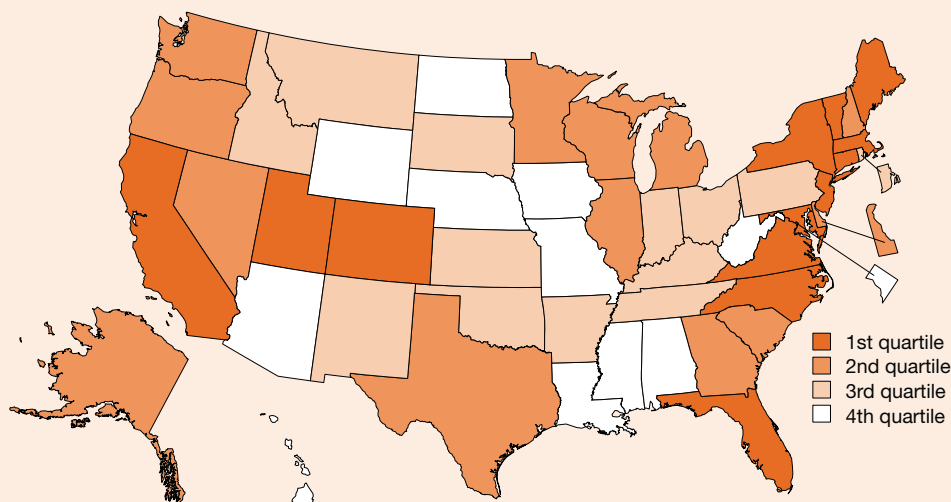
NOTE: National average for United States is reported value in Advanced Placement Report to the Nation.

SOURCE: College Board, Advanced Placement Report to the Nation (various years).

Share of Public High School Students Scoring 3 or Higher on at Least One Advanced Placement Exam

Figure 8-13

Share of public high school students scoring 3 or higher on at least one Advanced Placement Exam: 2008



1st quartile (23.4%–17.3%)	2nd quartile (16.6%–13.0%)	3rd quartile (11.9%–8.6%)	4th quartile (8.3%–3.7%)
California Colorado Connecticut Florida Maine † Maryland Massachusetts New Jersey New York North Carolina Utah Vermont † Virginia	Alaska † Delaware † Georgia Illinois Michigan Minnesota Nevada † New Hampshire † Oregon South Carolina † Texas Washington Wisconsin	Arkansas † Idaho † Indiana Kansas † Kentucky † Montana † New Mexico † Ohio Oklahoma † Pennsylvania Rhode Island † South Dakota † Tennessee	Alabama † Arizona District of Columbia Hawaii † Iowa Louisiana † Mississippi † Missouri Nebraska † North Dakota † West Virginia † Wyoming †

† EPSCoR state

SOURCE: College Board, Advanced Placement Report to the Nation. See table 8-13.

Findings

- Nationally, 15.2% of public school students in the class of 2008 demonstrated the ability to do college-level work by obtaining a score of 3 or higher on at least one AP Exam, a substantial increase over the 10.2% achieved by the class of 2000.
- Students from all states demonstrated greater success on AP Exams in 2008 than in 2000, but this success was not evenly distributed. In 2008, 20 states and the District of Columbia had percentages below the 2000 national average of 10.2% compared with 38 jurisdictions in 2000.
- The percentage of students who are successful on AP Exams varies widely among states. For the class of 2008, this percentage ranged from a high of 23.4% to a low of 3.7% across states. Some of this variation occurs because opportunities for advanced work are more readily available to students in certain states.
- Values of this indicator were higher for all jurisdictions in 2008 than in 2000. Although two of the three states with the largest increase in performance for the class of 2008 were EPSCoR states, most of the EPSCoR states ranked in the lower quartiles.

This indicator provides a measure of the extent to which high school students are successfully demonstrating mastery of college-level material. It is defined as the percentage of U.S. public high school graduates who have scored 3 or higher on at least one Advanced Placement (AP) Exam. Many colleges and universities grant college credit or advanced placement for AP Exam grades of 3 or higher. A high value on this indicator shows the extent to which students have been offered access to rigorous coursework and successfully mastered its requirements.

A total of 37 different AP Exams are offered each spring by the College Board. The exams are scored on a scale of 1 to 5, with 3 representing work equivalent to college-level performance ranging from midlevel B to midlevel C. To prepare for the AP Exam in a subject area, most students enroll in an AP class that employs a curriculum of high academic intensity. Performance on AP Exams is considered one of the best predictors of success in college by many colleges and universities.

Table 8-13

Share of public high school students scoring 3 or higher on at least one Advanced Placement Exam, by state: 2000, 2004, and 2008

(Percent)

State	2000	2004	2008
United States.....	10.2	13.2	15.2
Alabama.....	3.9	5.0	6.8
Alaska.....	10.1	10.8	13.3
Arizona.....	7.2	8.0	7.9
Arkansas.....	4.3	6.1	10.6
California.....	15.0	18.7	20.2
Colorado.....	12.2	16.2	19.0
Connecticut.....	13.6	17.6	21.0
Delaware.....	7.6	11.1	13.8
District of Columbia.....	6.6	8.2	6.9
Florida.....	13.5	19.2	18.2
Georgia.....	9.7	12.0	16.3
Hawaii.....	5.8	7.7	8.0
Idaho.....	6.5	8.1	9.5
Illinois.....	9.9	13.3	15.2
Indiana.....	6.0	7.7	10.0
Iowa.....	4.9	6.6	8.3
Kansas.....	4.4	6.3	8.6
Kentucky.....	5.5	7.7	10.0
Louisiana.....	1.9	2.5	3.7
Maine.....	10.1	12.8	19.3
Maryland.....	14.1	19.4	23.4
Massachusetts.....	14.5	18.1	20.8
Michigan.....	8.8	10.9	13.0
Minnesota.....	8.1	10.6	14.2
Mississippi.....	2.3	2.9	3.9
Missouri.....	3.7	5.3	6.5
Montana.....	6.8	8.8	10.6
Nebraska.....	3.2	4.0	6.5
Nevada.....	9.1	12.4	13.5
New Hampshire.....	9.2	10.9	15.5
New Jersey.....	12.9	15.5	17.3
New Mexico.....	6.1	8.1	9.9
New York.....	17.9	21.2	23.3
North Carolina.....	11.3	15.8	17.3
North Dakota.....	4.4	5.7	6.9
Ohio.....	7.1	9.4	10.8
Oklahoma.....	5.4	8.3	9.8
Oregon.....	7.1	8.8	13.1
Pennsylvania.....	8.3	10.1	11.9
Rhode Island.....	6.9	7.8	9.5
South Carolina.....	10.0	11.2	13.8
South Dakota.....	5.9	8.3	9.7
Tennessee.....	6.2	7.9	9.2
Texas.....	9.9	13.1	14.5
Utah.....	17.4	19.3	18.9
Vermont.....	11.5	14.0	19.8
Virginia.....	15.9	17.7	21.3
Washington.....	7.6	11.6	15.5
West Virginia.....	4.6	6.4	6.9
Wisconsin.....	10.5	13.7	16.6
Wyoming.....	3.8	6.7	7.5
Puerto Rico.....	NA	NA	NA

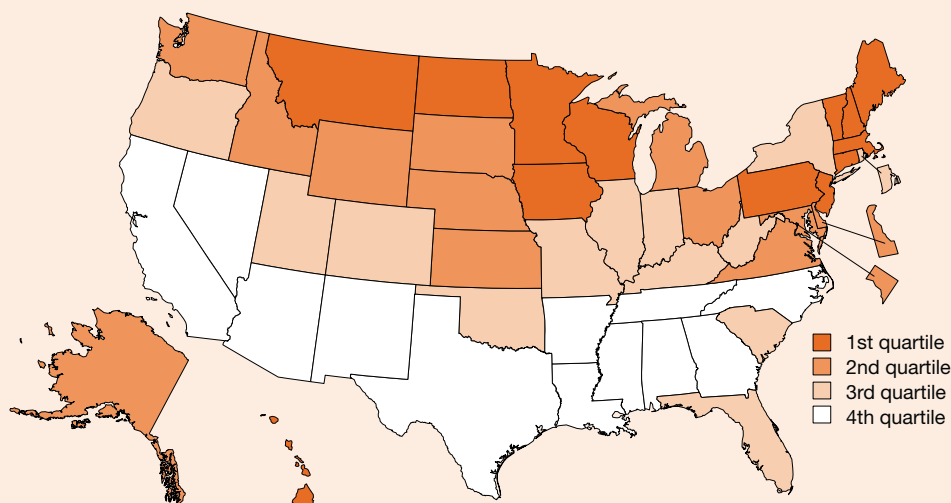
NA = not available

NOTE: National average for United States is reported value in Advanced Placement Report to the Nation.

SOURCE: College Board, Advanced Placement Report to the Nation (various years).

High School Graduates or Higher Among Individuals 25–44 Years Old

Figure 8-14
High school graduates or higher among individuals 25–44 years old: 2007



1st quartile (95.8%–91.0%)	2nd quartile (90.7%–89.3%)	3rd quartile (89.2%–86.2%)	4th quartile (85.8%–80.8%)
Connecticut	Alaska †	Colorado	Alabama †
Hawaii †	Delaware †	Florida	Arizona
Iowa	District of Columbia	Illinois	Arkansas †
Maine †	Idaho †	Indiana	California
Massachusetts	Kansas †	Kentucky †	Georgia
Minnesota	Maryland	Missouri	Louisiana †
Montana †	Michigan	New York	Mississippi †
New Hampshire †	Nebraska †	Oklahoma †	Nevada †
New Jersey	Ohio	Oregon	New Mexico †
North Dakota †	South Dakota †	Rhode Island †	North Carolina
Pennsylvania	Virginia	South Carolina †	Tennessee
Vermont †	Washington	Utah	Texas
Wisconsin	Wyoming †	West Virginia †	

† EPSCoR state

SOURCES: Census Bureau, 2000 Decennial Census; Population Estimates Program; and American Community Survey. See table 8-14.

Findings

- Nationwide, 86.7% of the early–mid-career population had at least a high school credential in 2007, an increase from the 85.0% who held such a credential in 2000.
- Forty-six states and the District of Columbia showed an increase in the percentage of their early–mid-career population with at least a high school credential between 2000 and 2007. Ten states had 2007 values below the 2000 national average of 85.0%, compared with 17 states and the District of Columbia in 2000.
- In 2007, the early–mid-career population with at least a high school credential varied greatly among states, ranging from 80.8% to 95.8%. States in close proximity to the southern border of the United States tended to rank lowest on this indicator.

This indicator represents the percentage of the early–mid-career population that has earned at least a high school credential. The indicator displays results based on where high school graduates live rather than where they were educated. High values indicate a resident population and potential workforce with widespread basic education credentials.

Estimates of educational attainment have been developed by the Census Bureau, which bases them on the 2000 Decennial Census and the American Community Survey (ACS). The census is conducted every 10 years, but ACS provides annual data on the characteristics of the population and where they live.

In 2005, ACS became the largest household survey in the United States, with an annual sample size of about 3 million addresses. Estimates of population are developed by the Census Bureau through the Population Estimates Program, which is also based on the 2000 Decennial Census. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-14

High school graduates or higher among individuals 25–44 years old, by state: 2000, 2003, and 2007

State	Graduates 25–44 years old			Population 25–44 years old			Graduates/population 25–44 years old (%)		
	2000	2003	2007	2000	2003	2007	2000	2003	2007
United States.....	72,241,876	71,684,426	72,358,114	85,040,251	84,216,990	83,483,659	85.0	85.1	86.7
Alabama.....	1,064,945	1,027,964	1,036,147	1,288,527	1,241,184	1,234,350	82.6	82.8	83.9
Alaska.....	186,160	167,805	176,847	203,522	194,823	197,222	91.5	86.1	89.7
Arizona.....	1,232,818	1,286,915	1,462,672	1,511,469	1,599,029	1,781,045	81.6	80.5	82.1
Arkansas.....	622,698	608,116	637,072	750,972	738,579	755,981	82.9	82.3	84.3
California.....	8,286,071	8,529,909	8,581,683	10,714,403	10,832,873	10,581,536	77.3	78.7	81.1
Colorado.....	1,242,919	1,239,272	1,283,903	1,400,850	1,417,501	1,448,632	88.7	87.4	88.6
Connecticut.....	926,614	903,677	847,351	1,032,689	999,800	925,266	89.7	90.4	91.6
Delaware.....	207,799	204,842	207,161	236,441	233,356	230,359	87.9	87.8	89.9
District of Columbia.....	157,077	160,782	173,875	189,439	188,758	192,511	82.9	85.2	90.3
Florida.....	3,840,710	3,924,625	4,166,135	4,569,347	4,676,558	4,812,179	84.1	83.9	86.6
Georgia.....	2,238,995	2,280,061	2,404,616	2,652,764	2,723,720	2,834,749	84.4	83.7	84.8
Hawaii.....	333,762	316,491	334,898	362,336	352,806	353,251	92.1	89.7	94.8
Idaho.....	316,815	323,260	362,468	362,401	370,690	401,380	87.4	87.2	90.3
Illinois.....	3,265,416	3,267,787	3,188,986	3,795,544	3,727,314	3,600,910	86.0	87.7	88.6
Indiana.....	1,567,100	1,494,212	1,528,485	1,791,828	1,748,331	1,734,016	87.5	85.5	88.1
Iowa.....	740,397	709,299	697,233	808,259	775,320	753,784	91.6	91.5	92.5
Kansas.....	687,268	675,316	656,852	769,204	743,961	727,170	89.3	90.8	90.3
Kentucky.....	1,009,246	1,013,026	1,023,568	1,210,773	1,182,970	1,188,087	83.4	85.6	86.2
Louisiana.....	1,044,255	1,014,054	949,440	1,293,128	1,230,819	1,159,582	80.8	82.4	81.9
Maine.....	339,227	325,208	312,986	370,597	358,691	337,652	91.5	90.7	92.7
Maryland.....	1,487,216	1,454,663	1,409,457	1,664,677	1,641,907	1,568,230	89.3	88.6	89.9
Massachusetts.....	1,795,438	1,763,262	1,651,537	1,989,783	1,922,446	1,794,769	90.2	91.7	92.0
Michigan.....	2,630,713	2,551,652	2,421,941	2,960,544	2,840,435	2,683,585	88.9	89.8	90.3
Minnesota.....	1,395,170	1,374,938	1,330,265	1,497,320	1,465,370	1,423,704	93.2	93.8	93.4
Mississippi.....	650,242	645,671	629,509	807,170	782,327	766,714	80.6	82.5	82.1
Missouri.....	1,426,806	1,399,485	1,397,472	1,626,302	1,587,931	1,579,645	87.7	88.1	88.5
Montana.....	225,105	213,382	216,166	245,220	232,735	235,309	91.8	91.7	91.9
Nebraska.....	441,527	432,446	415,179	487,107	471,024	457,810	90.6	91.8	90.7
Nevada.....	508,173	538,622	624,384	628,572	679,392	761,550	80.8	79.3	82.0
New Hampshire.....	350,744	340,140	326,094	381,240	373,644	351,263	92.0	91.0	92.8
New Jersey.....	2,313,820	2,254,281	2,184,317	2,624,146	2,578,072	2,400,533	88.2	87.4	91.0
New Mexico.....	425,745	400,847	433,949	516,100	506,956	516,167	82.5	79.1	84.1
New York.....	4,926,064	4,912,059	4,698,849	5,831,622	5,667,484	5,383,101	84.5	86.7	87.3
North Carolina.....	2,117,289	2,096,022	2,187,835	2,500,535	2,507,025	2,552,793	84.7	83.6	85.7
North Dakota.....	164,893	157,062	148,753	174,891	160,522	155,217	94.3	97.8	95.8
Ohio.....	2,965,744	2,840,789	2,754,008	3,325,210	3,172,294	3,054,756	89.2	89.5	90.2
Oklahoma.....	836,030	796,708	827,697	975,169	946,358	955,471	85.7	84.2	86.6
Oregon.....	861,602	880,905	907,879	997,269	1,003,698	1,034,933	86.4	87.8	87.7
Pennsylvania.....	3,136,195	2,966,827	2,895,587	3,508,562	3,343,434	3,182,590	89.4	88.7	91.0
Rhode Island.....	265,033	262,340	248,540	310,636	306,459	281,590	85.3	85.6	88.3
South Carolina.....	990,207	1,002,730	1,026,577	1,185,955	1,167,347	1,185,520	83.5	85.9	86.6
South Dakota.....	188,052	182,643	177,251	206,399	197,386	197,197	91.1	92.5	89.9
Tennessee.....	1,439,729	1,446,735	1,480,790	1,718,428	1,684,796	1,725,854	83.8	85.9	85.8
Texas.....	5,115,457	5,136,496	5,598,948	6,484,321	6,644,003	6,926,932	78.9	77.3	80.8
Utah.....	555,513	602,199	672,439	626,600	648,111	753,898	88.7	92.9	89.2
Vermont.....	162,109	153,679	147,144	176,456	168,392	157,657	91.9	91.3	93.3
Virginia.....	1,962,040	1,911,347	1,971,608	2,237,655	2,227,978	2,204,242	87.7	85.8	89.4
Washington.....	1,617,766	1,607,576	1,637,950	1,816,217	1,803,610	1,834,696	89.1	89.1	89.3
West Virginia.....	420,900	400,998	411,722	501,343	479,781	473,410	84.0	83.6	87.0
Wisconsin.....	1,429,331	1,369,084	1,369,475	1,581,690	1,537,180	1,499,802	90.4	89.1	91.3
Wyoming.....	126,931	116,217	122,414	138,619	131,810	135,059	91.6	88.2	90.6
Puerto Rico.....	794,579	NA	874,101	1,049,995	1,069,617	NA	75.7	NA	NA

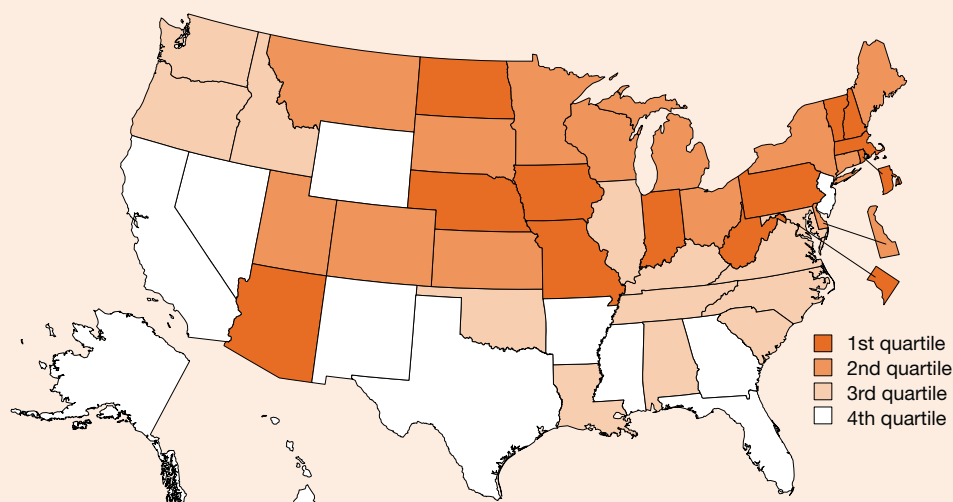
NA = not available

SOURCES: Census Bureau, 2000 Decennial Census; Population Estimates Program (various years); and American Community Survey (various years).

Bachelor's Degrees Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-15

Bachelor's degrees conferred per 1,000 individuals 18–24 years old: 2007



1st quartile (139.6–63.2)	2nd quartile (62.2–54.4)	3rd quartile (54.0–45.6)	4th quartile (44.1–20.7)
Arizona District of Columbia Indiana Iowa Massachusetts Missouri Nebraska † New Hampshire † North Dakota † Pennsylvania Rhode Island † Vermont † West Virginia †	Colorado Connecticut Delaware † Kansas † Maine † Michigan Minnesota Montana † New York Ohio South Dakota † Utah Wisconsin	Alabama † Idaho † Illinois Kentucky † Louisiana † Maryland North Carolina Oklahoma † Oregon South Carolina † Tennessee Virginia Washington	Alaska † Arkansas † California Florida Georgia Hawaii † Mississippi † Nevada † New Jersey New Mexico † Texas Wyoming †

† EPSCoR state

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; Census Bureau, 2000 Decennial Census; and Census Bureau, Population Estimates Program. See table 8-15.

Findings

- In 2007, 1.5 million bachelor's degrees were conferred nationally in all fields, which is up from 1.2 million in 1997 and represents an increase of 27%. Between 1997 and 2007, the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old in the population has increased by 8% nationwide.
- In 2007, state values on this indicator varied greatly. They ranged from 89.9 to 20.7 bachelor's degrees conferred per 1,000 individuals 18–24 years old.
- In 12 states and the District of Columbia, fewer bachelor's degrees were conferred per 1,000 individuals 18–24 years old in 2007 than in 1997.

Earning a bachelor's degree gives people greater opportunities to work in higher-paying jobs than are generally available to those with less education. It also prepares them for advanced education. In addition, the presence of higher education institutions that produce such degrees may generate resources for the state. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree.

Although the number of bachelor's degrees awarded is based on an actual count, the population ages 18–24 years is an estimate developed by the Census Bureau in the Population Estimates Program, which relies on the Decennial Census. Small differences in the indicator value between states or across time generally are not meaningful.

A high value for this indicator may suggest the successful provision of educational opportunity at this level. Student mobility after graduation, however, may make this indicator less meaningful in predicting the qualifications of a state's future workforce. A state's value for this indicator may also be high when its higher education system draws a large percentage of out-of-state students, a situation that sometimes occurs in states with small resident populations and the District of Columbia.

Table 8-15

Bachelor's degrees conferred per 1,000 individuals 18–24 years old, by state: 1997, 2002, and 2007

State	Bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	1,171,891	1,288,674	1,490,321	24,980,036	28,419,861	29,407,260	46.9	45.3	50.7
Alabama.....	20,638	20,223	21,762	433,513	448,685	446,162	47.6	45.1	48.8
Alaska.....	1,473	1,377	1,512	66,729	64,031	72,877	22.1	21.5	20.7
Arizona.....	20,029	26,553	41,640	430,444	548,385	589,973	46.5	48.4	70.6
Arkansas.....	9,214	10,078	11,421	248,415	270,578	262,261	37.1	37.2	43.5
California.....	108,255	126,507	145,083	3,050,146	3,564,996	3,797,718	35.5	35.5	38.2
Colorado.....	20,213	22,577	25,677	362,705	458,430	457,831	55.7	49.2	56.1
Connecticut.....	13,684	14,820	18,524	258,320	290,083	319,957	53.0	51.1	57.9
Delaware.....	4,295	4,894	5,093	65,110	80,006	83,909	66.0	61.2	60.7
District of Columbia.....	7,869	8,564	10,261	43,082	71,859	73,516	182.7	119.2	139.6
Florida.....	47,428	53,542	65,682	1,183,286	1,439,912	1,588,214	40.1	37.2	41.4
Georgia.....	27,396	29,820	36,564	736,994	876,433	900,438	37.2	34.0	40.6
Hawaii.....	4,702	4,757	5,486	117,605	122,728	124,276	40.0	38.8	44.1
Idaho.....	4,509	4,913	7,894	134,718	145,770	146,117	33.5	33.7	54.0
Illinois.....	51,742	57,862	63,214	1,108,589	1,246,753	1,303,052	46.7	46.4	48.5
Indiana.....	30,477	33,918	38,369	566,940	625,957	600,127	53.8	54.2	63.9
Iowa.....	17,939	19,255	20,538	270,541	304,469	304,047	66.3	63.2	67.5
Kansas.....	14,739	15,135	17,372	254,180	286,702	288,019	58.0	52.8	60.3
Kentucky.....	14,705	16,419	19,125	394,870	409,809	381,413	37.2	40.1	50.1
Louisiana.....	17,506	20,216	21,428	463,579	491,999	469,512	37.8	41.1	45.6
Maine.....	5,565	5,787	6,859	110,057	109,039	111,798	50.6	53.1	61.4
Maryland.....	21,391	23,161	26,513	427,282	486,971	539,344	50.1	47.6	49.2
Massachusetts.....	40,378	43,069	47,567	501,116	600,205	656,481	80.6	71.8	72.5
Michigan.....	44,427	47,538	52,625	916,990	971,354	967,733	48.4	48.9	54.4
Minnesota.....	22,594	24,475	29,044	426,154	492,940	503,943	53.0	49.7	57.6
Mississippi.....	10,252	11,899	12,052	296,825	315,700	303,351	34.5	37.7	39.7
Missouri.....	27,994	31,990	35,127	498,637	557,922	555,959	56.1	57.3	63.2
Montana.....	4,752	5,277	5,217	86,917	90,990	93,761	54.7	58.0	55.6
Nebraska.....	9,871	10,646	12,065	163,298	181,923	185,182	60.4	58.5	65.2
Nevada.....	3,669	4,244	5,568	140,784	191,087	207,957	26.1	22.2	26.8
New Hampshire.....	7,581	7,260	8,274	93,994	110,493	117,693	80.7	65.7	70.3
New Jersey.....	24,845	28,376	32,695	667,162	702,715	759,003	37.2	40.4	43.1
New Mexico.....	6,088	5,823	6,815	171,641	193,224	203,225	35.5	30.1	33.5
New York.....	96,193	101,741	117,274	1,588,411	1,836,834	1,977,437	60.6	55.4	59.3
North Carolina.....	34,202	36,132	40,920	694,894	821,050	857,552	49.2	44.0	47.7
North Dakota.....	4,627	4,810	5,543	66,864	77,340	82,096	69.2	62.2	67.5
Ohio.....	49,163	52,934	58,813	1,046,134	1,092,489	1,074,846	47.0	48.5	54.7
Oklahoma.....	15,116	16,005	18,553	330,430	376,524	368,779	45.7	42.5	50.3
Oregon.....	13,194	13,955	17,270	295,027	342,012	332,599	44.7	40.8	51.9
Pennsylvania.....	62,482	69,542	81,168	1,021,108	1,133,927	1,192,303	61.2	61.3	68.1
Rhode Island.....	8,409	9,038	10,215	82,236	112,316	113,670	102.3	80.5	89.9
South Carolina.....	15,177	17,294	20,092	379,854	419,038	430,733	40.0	41.3	46.6
South Dakota.....	4,390	4,477	5,104	74,361	80,949	82,097	59.0	55.3	62.2
Tennessee.....	21,147	23,330	26,877	509,421	564,930	548,165	41.5	41.3	49.0
Texas.....	71,409	79,556	94,601	1,979,779	2,335,170	2,421,150	36.1	34.1	39.1
Utah.....	15,606	17,876	19,655	277,479	340,031	328,226	56.2	52.6	59.9
Vermont.....	4,299	4,642	5,060	51,147	59,065	61,388	84.1	78.6	82.4
Virginia.....	30,207	32,819	39,151	648,469	711,752	762,960	46.6	46.1	51.3
Washington.....	22,846	24,172	28,500	521,036	594,975	596,815	43.8	40.6	47.8
West Virginia.....	8,172	9,022	10,543	183,414	173,637	157,857	44.6	52.0	66.8
Wisconsin.....	27,380	28,699	32,229	487,388	543,276	550,539	56.2	52.8	58.5
Wyoming.....	1,652	1,655	1,687	51,961	52,398	53,199	31.8	31.6	31.7
Puerto Rico.....	14,107	16,464	16,989	NA	NA	NA	NA	NA	NA

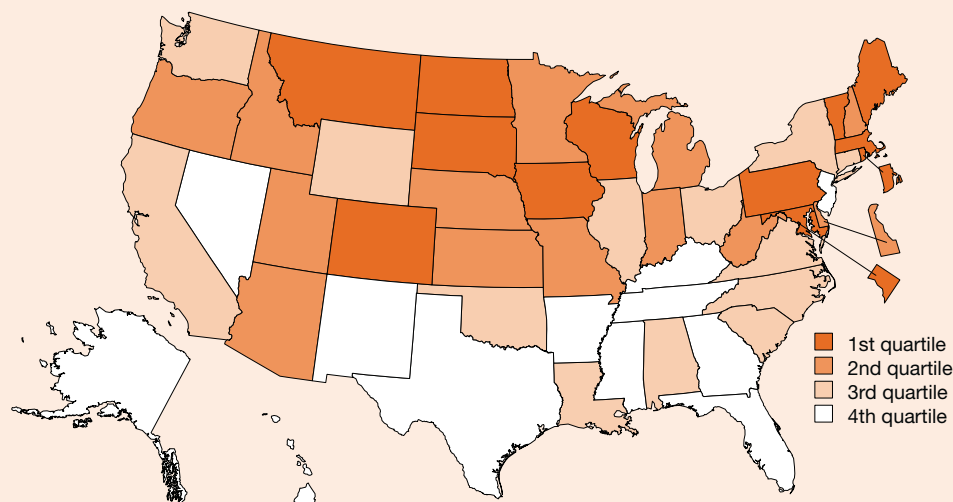
NA = not available

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census; and Census Bureau, Population Estimates Program (various years).

Bachelor's Degrees in Natural Sciences and Engineering Conferred per 1,000 Individuals 18–24 Years Old

Figure 8-16

Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old: 2007



1st quartile (19.8–10.4)	2nd quartile (10.2–8.7)	3rd quartile (8.6–6.9)	4th quartile (6.8–3.7)
Colorado District of Columbia Iowa Maine † Maryland Massachusetts Montana † North Dakota † Pennsylvania Rhode Island † South Dakota † Vermont † Wisconsin	Arizona Delaware † Idaho † Indiana Kansas † Michigan Minnesota Missouri Nebraska † New Hampshire † Oregon Utah West Virginia †	Alabama † California Connecticut Illinois Louisiana † New York North Carolina Ohio Oklahoma † South Carolina † Virginia Washington Wyoming †	Alaska † Arkansas † Florida Georgia Hawaii † Kentucky † Mississippi † Nevada † New Jersey New Mexico † Tennessee Texas

† EPSCoR state

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; Census Bureau, 2000 Decennial Census; and Census Bureau, Population Estimates Program. See table 8-16.

Findings

- Between 1997 and 2007, the value of this indicator did not change appreciably.
- In 2007, the value of this indicator ranged from 15.4 to 3.7 bachelor's degrees conferred per 1,000 individuals 18–24 years old for individual states.
- States that ranked in the top two quartiles on this indicator were generally the same as those in the top two quartiles for the number of bachelor's degrees conferred per 1,000 individuals 18–24 years old.
- EPSCoR states were uniformly distributed throughout the four quartiles of the state ranking, indicating that in spite of the lack of a large, federally supported research structure, institutions in these states do provide college-level training in NS&E fields.

Natural sciences and engineering (NS&E) fields include the physical, earth, ocean, atmospheric, biological, agricultural, and computer sciences; mathematics; and engineering. NS&E fields exclude social sciences and psychology. The ratio of new NS&E bachelor's degrees to the population ages 18–24 years indicates the extent to which a state prepares young people to enter the types of technology-intensive occupations that are fundamental to a knowledge-based, technology-driven economy. In addition, the presence of higher education institutions that produce such degrees may generate resources for the state. The cohort 18–24 years old was chosen to approximate the age range of most students who are pursuing an undergraduate degree.

Although the number of NS&E bachelor's degrees awarded is based on an actual count, the population ages 18–24 years is an estimate developed by the Census Bureau in the Population Estimates Program, which relies on the Decennial Census. Small differences in the value of the indicator between states or across time generally are not meaningful.

Because students often relocate after graduation, this measure does not necessarily indicate the qualifications of a state's future workforce. A state's value for this indicator may also be high when its higher education system draws a large percentage of out-of-state students to study in NS&E fields, a situation that sometimes occurs in states with small resident populations and the District of Columbia.

Table 8-16

Bachelor's degrees in natural sciences and engineering conferred per 1,000 individuals 18–24 years old, by state: 1997, 2002, and 2007

State	NS&E bachelor's degrees			Population 18–24 years old			Degrees/1,000 individuals 18–24 years old		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
EPSCoR states.....	33,748	35,339	37,632	4,462,502	4,864,031	4,847,332	7.6	7.3	7.8
Non-EPSCoR states.....	164,878	178,965	197,718	20,474,452	23,483,971	24,486,412	8.1	7.6	8.1
Average EPSCoR state value.....	na	na	na	na	na	na	8.6	8.1	8.6
Average non-EPSCoR state value.....	na	na	na	na	na	na	8.6	8.2	8.7
United States.....	199,868	216,028	236,802	24,980,036	28,419,861	29,407,260	8.0	7.6	8.1
Alabama.....	3,460	3,333	3,728	433,513	448,685	446,162	8.0	7.4	8.4
Alaska.....	301	229	267	66,729	64,031	72,877	4.5	3.6	3.7
Arizona.....	2,773	3,715	6,034	430,444	548,385	589,973	6.4	6.8	10.2
Arkansas.....	1,462	1,656	1,525	248,415	270,578	262,261	5.9	6.1	5.8
California.....	21,476	23,435	26,086	3,050,146	3,564,996	3,797,718	7.0	6.6	6.9
Colorado.....	4,477	4,993	5,046	362,705	458,430	457,831	12.3	10.9	11.0
Connecticut.....	1,954	1,904	2,333	258,320	290,083	319,957	7.6	6.6	7.3
Delaware.....	693	717	734	65,110	80,006	83,909	10.6	9.0	8.7
District of Columbia.....	1,242	1,724	1,452	43,082	71,859	73,516	28.8	24.0	19.8
Florida.....	6,642	7,808	9,226	1,183,286	1,439,912	1,588,214	5.6	5.4	5.8
Georgia.....	4,546	5,509	5,984	736,994	876,433	900,438	6.2	6.3	6.6
Hawaii.....	582	686	683	117,605	122,728	124,276	4.9	5.6	5.5
Idaho.....	871	1,008	1,324	134,718	145,770	146,117	6.5	6.9	9.1
Illinois.....	8,428	9,559	9,441	1,108,589	1,246,753	1,303,052	7.6	7.7	7.2
Indiana.....	5,170	5,378	5,860	566,940	625,957	600,127	9.1	8.6	9.8
Iowa.....	2,956	3,140	3,237	270,541	304,469	304,047	10.9	10.3	10.6
Kansas.....	2,312	2,482	2,506	254,180	286,702	288,019	9.1	8.7	8.7
Kentucky.....	2,177	2,312	2,419	394,870	409,809	381,413	5.5	5.6	6.3
Louisiana.....	3,061	3,594	3,381	463,579	491,999	469,512	6.6	7.3	7.2
Maine.....	991	1,110	1,185	110,057	109,039	111,798	9.0	10.2	10.6
Maryland.....	4,389	4,862	5,585	427,282	486,971	539,344	10.3	10.0	10.4
Massachusetts.....	7,115	7,394	7,564	501,116	600,205	656,481	14.2	12.3	11.5
Michigan.....	8,324	8,609	9,240	916,990	971,354	967,733	9.1	8.9	9.5
Minnesota.....	3,717	4,205	4,722	426,154	492,940	503,943	8.7	8.5	9.4
Mississippi.....	1,707	1,753	1,767	296,825	315,700	303,351	5.8	5.6	5.8
Missouri.....	4,525	5,310	5,054	498,637	557,922	555,959	9.1	9.5	9.1
Montana.....	1,135	1,197	1,133	86,917	90,990	93,761	13.1	13.2	12.1
Nebraska.....	1,477	1,412	1,733	163,298	181,923	185,182	9.0	7.8	9.4
Nevada.....	503	556	785	140,784	191,087	207,957	3.6	2.9	3.8
New Hampshire.....	1,265	1,133	1,127	93,994	110,493	117,693	13.5	10.3	9.6
New Jersey.....	4,654	5,392	5,147	667,162	702,715	759,003	7.0	7.7	6.8
New Mexico.....	1,124	1,129	1,251	171,641	193,224	203,225	6.5	5.8	6.2
New York.....	14,300	15,173	16,436	1,588,411	1,836,834	1,977,437	9.0	8.3	8.3
North Carolina.....	6,541	6,313	6,754	694,894	821,050	857,552	9.4	7.7	7.9
North Dakota.....	843	876	898	66,864	77,340	82,096	12.6	11.3	10.9
Ohio.....	7,980	8,002	8,432	1,046,134	1,092,489	1,074,846	7.6	7.3	7.8
Oklahoma.....	2,473	2,514	2,583	330,430	376,524	368,779	7.5	6.7	7.0
Oregon.....	2,073	2,483	2,984	295,027	342,012	332,599	7.0	7.3	9.0
Pennsylvania.....	11,287	12,425	13,953	1,021,108	1,133,927	1,192,303	11.1	11.0	11.7
Rhode Island.....	1,134	1,287	1,571	82,236	112,316	113,670	13.8	11.5	13.8
South Carolina.....	2,821	2,798	3,073	379,854	419,038	430,733	7.4	6.7	7.1
South Dakota.....	991	1,009	1,056	74,361	80,949	82,097	13.3	12.5	12.9
Tennessee.....	3,455	3,380	3,617	509,421	564,930	548,165	6.8	6.0	6.6
Texas.....	11,292	12,014	14,487	1,979,779	2,335,170	2,421,150	5.7	5.1	6.0
Utah.....	2,714	3,037	3,338	277,479	340,031	328,226	9.8	8.9	10.2
Vermont.....	754	809	944	51,147	59,065	61,388	14.7	13.7	15.4
Virginia.....	5,529	5,875	6,562	648,469	711,752	762,960	8.5	8.3	8.6
Washington.....	3,860	4,053	4,614	521,036	594,975	596,815	7.4	6.8	7.7
West Virginia.....	1,141	1,296	1,562	183,414	173,637	157,857	6.2	7.5	9.9
Wisconsin.....	4,701	4,997	5,982	487,388	543,276	550,539	9.6	9.2	10.9
Wyoming.....	470	443	397	51,961	52,398	53,199	9.0	8.5	7.5
Puerto Rico.....	2,771	3,074	2,787	NA	NA	NA	NA	NA	NA

na = not applicable; NA = not available

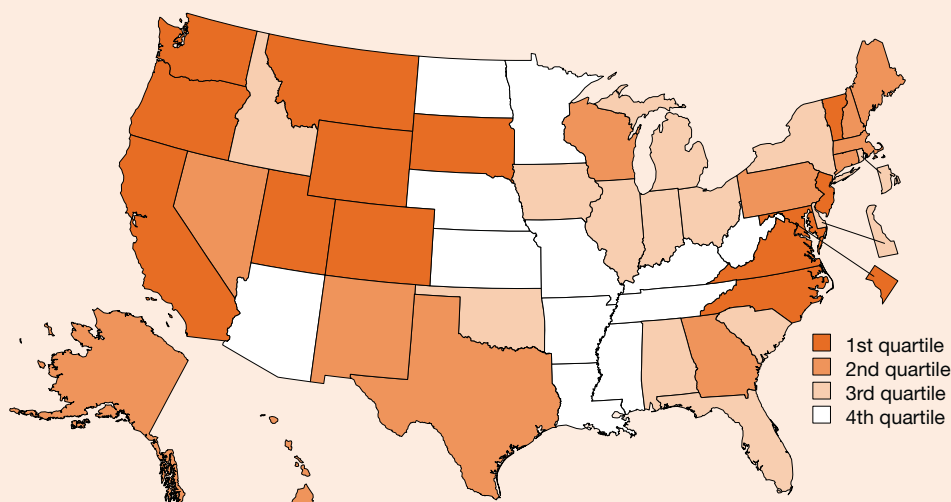
EPSCoR = Experimental Program to Stimulate Competitive Research; NS&E = natural sciences and engineering

NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census; and Census Bureau, Population Estimates Program (various years).

S&E Degrees as Share of Higher Education Degrees Conferred

Figure 8-17
S&E degrees as share of higher education degrees conferred: 2007



1st quartile (53.3%–34.5%)	2nd quartile (34.3%–30.9%)	3rd quartile (30.8%–28.0%)	4th quartile (27.9%–18.0%)
California	Alaska †	Alabama †	Arizona
Colorado	Connecticut	Delaware †	Arkansas †
District of Columbia	Georgia	Florida	Kansas †
Maryland	Hawaii †	Idaho †	Kentucky †
Montana †	Maine †	Illinois	Louisiana †
New Jersey	Massachusetts	Indiana	Minnesota
North Carolina	Nevada †	Iowa	Mississippi †
Oregon	New Hampshire †	Michigan	Missouri
South Dakota †	New Mexico †	New York	Nebraska †
Utah	Pennsylvania	Ohio	North Dakota †
Vermont †	Texas	Oklahoma †	Tennessee
Virginia	Wisconsin	Rhode Island †	West Virginia †
Washington		South Carolina †	
Wyoming †			

† EPSCoR state

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System. See table 8-17.

Findings

- In 2007, nearly 686,000 S&E bachelor's, master's, and doctoral degrees were conferred nationwide, an increase of nearly 27% during the past decade.
- The proportion of S&E degrees as a share of total degrees conferred did not show any substantial changes between 1997 and 2007.
- There are noteworthy differences in the proportions of technical higher education degrees conferred in different states. In some states, more than 40% of higher education degrees were awarded in technical fields. In others, only about 20% of higher education degrees were awarded in technical fields.
- States in which the highest percentages of higher education degrees were conferred in technical fields tended to be located in the western United States.
- The District of Columbia has a high value because of the large number of programs in political science and public administration at several of its academic institutions.

This indicator is a measure of the extent to which a state's higher education programs are concentrated in S&E fields. The indicator is expressed as the percentage of higher education degrees that were conferred in S&E fields.

S&E fields include the physical, earth, ocean, atmospheric, biological, agricultural, computer, and social sciences; mathematics; engineering; and psychology. Counts of both S&E degrees and higher education degrees conferred include bachelor's, master's, and doctoral degrees; associate's degrees are excluded.

Degree data reflect the location of the degree-granting institution, not the state where degree-earning students permanently reside. The year indicates the end date of the academic year. For example, data for 2007 represent degrees conferred during the 2006–07 academic year.

Table 8-17

S&E degrees as share of higher education degrees conferred, by state: 1997, 2002, and 2007

State	S&E degrees			All higher education degrees			S&E/higher education degrees (%)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	538,702	597,517	685,914	1,636,726	1,811,202	2,138,003	32.9	33.0	32.1
Alabama.....	7,801	7,747	9,920	28,678	29,034	32,207	27.2	26.7	30.8
Alaska.....	684	561	750	2,009	1,828	2,261	34.0	30.7	33.2
Arizona.....	7,244	8,667	13,463	30,255	42,697	74,778	23.9	20.3	18.0
Arkansas.....	2,930	3,385	3,440	11,577	12,740	14,835	25.3	26.6	23.2
California.....	66,347	77,904	89,947	151,485	176,513	204,838	43.8	44.1	43.9
Colorado.....	11,427	13,308	13,729	28,304	31,388	35,981	40.4	42.4	38.2
Connecticut.....	7,153	7,294	9,052	21,300	22,939	27,781	33.6	31.8	32.6
Delaware.....	2,005	2,084	2,325	5,660	6,583	7,642	35.4	31.7	30.4
District of Columbia.....	7,068	7,555	8,287	15,872	16,468	20,489	44.5	45.9	40.4
Florida.....	17,551	20,934	27,510	65,429	73,988	91,561	26.8	28.3	30.0
Georgia.....	10,725	13,605	16,566	37,793	42,480	49,495	28.4	32.0	33.5
Hawaii.....	2,128	2,129	2,511	6,533	6,211	7,330	32.6	34.3	34.3
Idaho.....	2,038	2,305	2,859	5,656	6,245	9,614	36.0	36.9	29.7
Illinois.....	22,100	25,141	30,055	80,243	89,307	101,537	27.5	28.2	29.6
Indiana.....	12,127	12,833	14,442	39,188	44,005	51,564	30.9	29.2	28.0
Iowa.....	6,704	6,879	7,893	21,926	23,706	25,698	30.6	29.0	30.7
Kansas.....	6,065	6,388	6,552	20,074	20,728	23,943	30.2	30.8	27.4
Kentucky.....	5,299	6,154	7,218	19,669	21,825	27,152	26.9	28.2	26.6
Louisiana.....	6,843	7,322	7,767	23,565	26,491	28,224	29.0	27.6	27.5
Maine.....	2,236	2,408	2,733	6,686	7,145	8,532	33.4	33.7	32.0
Maryland.....	12,177	13,859	16,932	32,362	35,601	41,936	37.6	38.9	40.4
Massachusetts.....	22,537	24,538	26,363	66,594	71,260	78,421	33.8	34.4	33.6
Michigan.....	19,809	20,938	23,006	62,669	70,717	75,304	31.6	29.6	30.6
Minnesota.....	9,619	11,243	12,571	29,990	33,450	45,085	32.1	33.6	27.9
Mississippi.....	3,602	3,887	4,294	13,823	15,619	16,438	26.1	24.9	26.1
Missouri.....	10,841	12,813	13,515	39,902	46,834	53,828	27.2	27.4	25.1
Montana.....	2,240	2,327	2,450	5,706	6,340	6,509	39.3	36.7	37.6
Nebraska.....	3,420	3,663	4,115	12,629	14,190	15,765	27.1	25.8	26.1
Nevada.....	1,266	1,503	2,267	4,726	5,489	7,279	26.8	27.4	31.1
New Hampshire.....	3,212	3,626	3,725	9,772	9,486	11,207	32.9	38.2	33.2
New Jersey.....	13,725	16,083	16,851	34,345	39,686	46,676	40.0	40.5	36.1
New Mexico.....	2,981	2,724	3,302	8,835	8,402	9,748	33.7	32.4	33.9
New York.....	48,004	50,423	55,360	146,034	155,906	185,736	32.9	32.3	29.8
North Carolina.....	15,028	16,470	19,022	43,477	46,754	55,071	34.6	35.2	34.5
North Dakota.....	1,587	1,570	1,731	5,417	5,777	7,042	29.3	27.2	24.6
Ohio.....	20,918	21,879	24,410	69,154	73,784	82,584	30.2	29.7	29.6
Oklahoma.....	6,541	6,808	7,442	20,001	21,531	24,244	32.7	31.6	30.7
Oregon.....	6,359	6,828	8,387	17,733	19,139	23,655	35.9	35.7	35.5
Pennsylvania.....	27,575	30,717	35,314	84,854	95,111	113,396	32.5	32.3	31.1
Rhode Island.....	3,132	3,430	3,875	10,558	11,359	12,724	29.7	30.2	30.5
South Carolina.....	6,550	7,255	7,649	20,179	22,023	25,841	32.5	32.9	29.6
South Dakota.....	2,128	1,962	2,204	5,512	5,493	6,386	38.6	35.7	34.5
Tennessee.....	8,172	8,425	9,272	28,733	32,004	36,576	28.4	26.3	25.3
Texas.....	29,744	33,844	40,387	97,090	108,049	130,830	30.6	31.3	30.9
Utah.....	6,984	7,793	8,787	18,920	21,496	23,993	36.9	36.3	36.6
Vermont.....	2,183	2,264	2,880	5,517	6,003	7,042	39.6	37.7	40.9
Virginia.....	16,270	17,956	20,679	42,316	44,555	53,981	38.4	40.3	38.3
Washington.....	10,761	12,292	14,026	30,499	31,971	37,541	35.3	38.4	37.4
West Virginia.....	2,629	2,927	3,239	10,548	11,413	13,707	24.9	25.6	23.6
Wisconsin.....	10,986	11,684	13,691	34,805	37,284	41,842	31.6	31.3	32.7
Wyoming.....	1,247	1,183	1,149	2,124	2,155	2,154	58.7	54.9	53.3
Puerto Rico.....	4,896	5,715	5,620	15,811	19,433	22,734	31.0	29.4	24.7

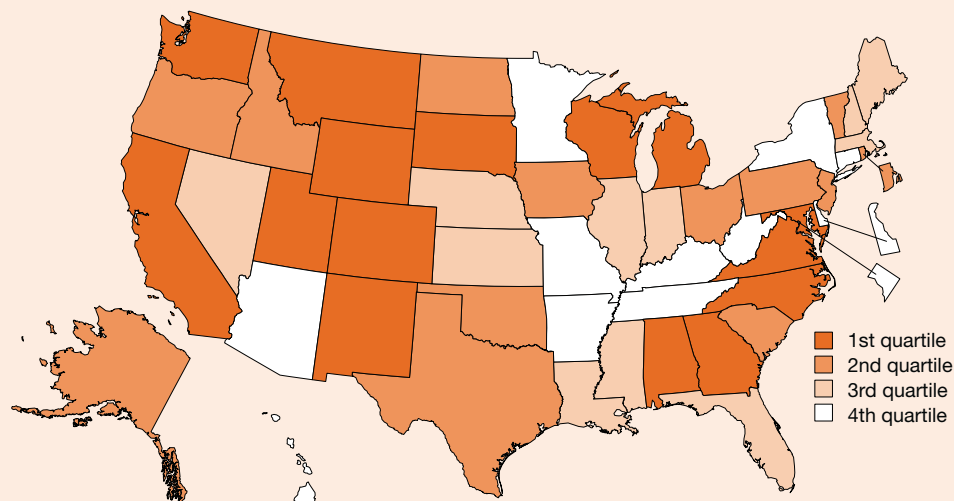
NOTES: S&E degrees include bachelor's, master's, and doctorate. S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering. "All higher education degrees" includes bachelor's, master's, and doctorate.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Natural Sciences and Engineering Degrees as Share of Higher Education Degrees Conferred

Figure 8-18

Natural sciences and engineering degrees as share of higher education degrees conferred: 2007



1st quartile (34.7%–19.6%)	2nd quartile (19.4%–17.2%)	3rd quartile (17.0%–15.2%)	4th quartile (15.1%–11.5%)
Alabama †	Alaska †	Florida	Arizona
California	Idaho †	Illinois	Arkansas †
Colorado	Iowa	Indiana	Connecticut
Georgia	New Jersey	Kansas †	Delaware †
Maryland	North Dakota †	Louisiana †	District of Columbia
Michigan	Ohio	Maine †	Hawaii †
Montana †	Oklahoma †	Massachusetts	Kentucky †
New Mexico †	Oregon	Mississippi †	Minnesota
North Carolina	Pennsylvania	Nebraska †	Missouri
South Dakota †	Rhode Island †	Nevada †	New York
Utah	South Carolina †	New Hampshire †	Tennessee
Virginia	Texas		West Virginia †
Washington	Vermont †		
Wisconsin			
Wyoming †			

† EPSCoR state

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System. See table 8-18.

Findings

- In 2007, nearly 376,000 NS&E bachelor's, master's, and doctoral degrees were conferred nationwide, an increase of nearly 25% during the past decade.
- The proportion of NS&E degrees as a share of total degrees conferred showed an 8% decline between 2002 and 2007.
- There are noteworthy differences in the proportions of natural science or engineering higher education degrees conferred in different states. In 2007, the proportions ranged between 35% and 11%.
- States with the highest percentage of higher education degrees in natural science or engineering fields tended to be located in the western United States, and four of the top five are EPSCoR states.

This indicator is a measure of the extent to which a state's higher education programs are concentrated in natural sciences and engineering (NS&E) fields. The indicator is expressed as the percentage of higher education degrees that were conferred in NS&E fields.

NS&E fields include the physical, earth, ocean, atmospheric, biological, agricultural, and computer sciences; mathematics; and engineering. Social sciences such as anthropology, economics, political science and public administration, psychology, and sociology are not included. Counts of both NS&E degrees and higher education degrees conferred include bachelor's, master's, and doctoral degrees; associate's degrees are excluded.

Degree data reflect the location of the degree-granting institution, not the state in which degree-earning students permanently reside. The year reflects the end date of the academic year. For example, data for 2007 represent degrees conferred during the 2006–07 academic year.

Table 8-18

Natural sciences and engineering degrees as share of higher education degrees conferred, by state: 1997, 2002, and 2007

State	NS&E degrees			All higher education degrees			NS&E/higher education degrees (%)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	300,380	346,643	375,931	1,636,726	1,811,202	2,138,003	18.4	19.1	17.6
Alabama.....	4,971	4,842	6,550	28,678	29,034	32,207	17.3	16.7	20.3
Alaska.....	440	338	438	2,009	1,828	2,261	21.9	18.5	19.4
Arizona.....	4,379	5,713	8,569	30,255	42,697	74,778	14.5	13.4	11.5
Arkansas.....	1,751	2,276	2,112	11,577	12,740	14,835	15.1	17.9	14.2
California.....	35,241	40,070	42,934	151,485	176,513	204,838	23.3	22.7	21.0
Colorado.....	6,625	8,100	7,506	28,304	31,388	35,981	23.4	25.8	20.9
Connecticut.....	3,196	3,296	4,206	21,300	22,939	27,781	15.0	14.4	15.1
Delaware.....	1,006	996	1,126	5,660	6,583	7,642	17.8	15.1	14.7
District of Columbia.....	2,963	3,701	3,061	15,872	16,468	20,489	18.7	22.5	14.9
Florida.....	9,334	11,944	14,494	65,429	73,988	91,561	14.3	16.1	15.8
Georgia.....	6,366	8,673	10,230	37,793	42,480	49,495	16.8	20.4	20.7
Hawaii.....	899	976	1,027	6,533	6,211	7,330	13.8	15.7	14.0
Idaho.....	1,298	1,564	1,846	5,656	6,245	9,614	22.9	25.0	19.2
Illinois.....	12,308	15,361	17,106	80,243	89,307	101,537	15.3	17.2	16.8
Indiana.....	7,219	7,967	8,546	39,188	44,005	51,564	18.4	18.1	16.6
Iowa.....	3,966	4,209	4,739	21,926	23,706	25,698	18.1	17.8	18.4
Kansas.....	3,572	3,875	3,638	20,074	20,728	23,943	17.8	18.7	15.2
Kentucky.....	2,960	3,694	4,039	19,669	21,825	27,152	15.0	16.9	14.9
Louisiana.....	4,249	4,828	4,730	23,565	26,491	28,224	18.0	18.2	16.8
Maine.....	1,220	1,331	1,403	6,686	7,145	8,532	18.2	18.6	16.4
Maryland.....	6,869	8,144	9,891	32,362	35,601	41,936	21.2	22.9	23.6
Massachusetts.....	11,411	12,634	12,988	66,594	71,260	78,421	17.1	17.7	16.6
Michigan.....	12,698	13,977	14,726	62,669	70,717	75,304	20.3	19.8	19.6
Minnesota.....	4,997	6,909	6,773	29,990	33,450	45,085	16.7	20.7	15.0
Mississippi.....	2,342	2,528	2,773	13,823	15,619	16,438	16.9	16.2	16.9
Missouri.....	6,020	7,367	7,301	39,902	46,834	53,828	15.1	15.7	13.6
Montana.....	1,504	1,669	1,571	5,706	6,340	6,509	26.4	26.3	24.1
Nebraska.....	2,178	2,350	2,533	12,629	14,190	15,765	17.2	16.6	16.1
Nevada.....	740	887	1,234	4,726	5,489	7,279	15.7	16.2	17.0
New Hampshire.....	1,833	2,167	1,726	9,772	9,486	11,207	18.8	22.8	15.4
New Jersey.....	7,441	9,098	8,513	34,345	39,686	46,676	21.7	22.9	18.2
New Mexico.....	1,877	1,886	2,201	8,835	8,402	9,748	21.2	22.4	22.6
New York.....	23,908	26,586	27,486	146,034	155,906	185,736	16.4	17.1	14.8
North Carolina.....	8,388	9,629	10,947	43,477	46,754	55,071	19.3	20.6	19.9
North Dakota.....	1,053	1,115	1,208	5,417	5,777	7,042	19.4	19.3	17.2
Ohio.....	12,290	13,512	14,240	69,154	73,784	82,584	17.8	18.3	17.2
Oklahoma.....	3,688	3,862	4,170	20,001	21,531	24,244	18.4	17.9	17.2
Oregon.....	3,014	3,470	4,220	17,733	19,139	23,655	17.0	18.1	17.8
Pennsylvania.....	15,787	18,537	20,083	84,854	95,111	113,396	18.6	19.5	17.7
Rhode Island.....	1,691	2,017	2,231	10,558	11,359	12,724	16.0	17.8	17.5
South Carolina.....	4,121	4,598	4,486	20,179	22,023	25,841	20.4	20.9	17.4
South Dakota.....	1,336	1,371	1,405	5,512	5,493	6,386	24.2	25.0	22.0
Tennessee.....	4,638	4,651	5,157	28,733	32,004	36,576	16.1	14.5	14.1
Texas.....	18,346	21,547	24,382	97,090	108,049	130,830	18.9	19.9	18.6
Utah.....	3,749	4,380	4,707	18,920	21,496	23,993	19.8	20.4	19.6
Vermont.....	964	1,045	1,320	5,517	6,003	7,042	17.5	17.4	18.7
Virginia.....	8,669	9,768	10,747	42,316	44,555	53,981	20.5	21.9	19.9
Washington.....	5,897	7,277	7,364	30,499	31,971	37,541	19.3	22.8	19.6
West Virginia.....	1,516	1,817	2,067	10,548	11,413	13,707	14.4	15.9	15.1
Wisconsin.....	6,634	7,232	8,433	34,805	37,284	41,842	19.1	19.4	20.2
Wyoming.....	818	859	748	2,124	2,155	2,154	38.5	39.9	34.7
Puerto Rico.....	3,439	4,082	3,636	15,811	19,433	22,734	21.8	21.0	16.0

NS&E = natural sciences and engineering

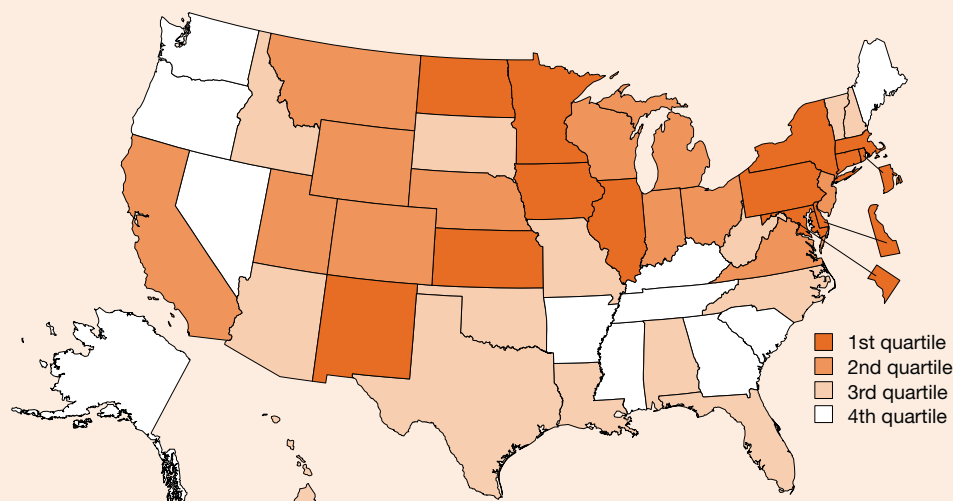
NOTES: NS&E degrees include bachelor's, master's, and doctorate. NS&E degrees include physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; mathematics; and engineering. "All higher education degrees" includes bachelor's, master's, and doctorate.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

S&E Graduate Students per 1,000 Individuals 25–34 Years Old

Figure 8-19

S&E graduate students per 1,000 individuals 25–34 years old: 2007



1st quartile (88.9–14.2)	2nd quartile (13.4–11.2)	3rd quartile (10.8–8.9)	4th quartile (8.3–5.1)
Connecticut	California	Alabama †	Alaska †
Delaware †	Colorado	Arizona	Arkansas †
District of Columbia	Indiana	Florida	Georgia
Illinois	Michigan	Hawaii †	Kentucky †
Iowa	Montana †	Idaho †	Maine †
Kansas †	Nebraska †	Louisiana †	Mississippi †
Maryland	New Jersey	Missouri	Nevada †
Massachusetts	Ohio	New Hampshire †	Oregon
Minnesota	Utah	North Carolina	South Carolina †
New Mexico †	Virginia	Oklahoma †	Tennessee
New York	Wisconsin	South Dakota †	Washington
North Dakota †	Wyoming †	Texas	
Pennsylvania		Vermont †	
Rhode Island †		West Virginia †	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering; and Census Bureau, Population Estimates Program. See table 8-19.

Findings

- The number of S&E graduate students in the United States grew from approximately 405,000 in 1997 to 499,000 in 2007, a 23% increase.
- Individual states provided graduate level S&E training to varying proportions of the population, with 2.9% to 0.5% of individuals 25–34 years old pursuing S&E graduate studies in 2007.
- Changes in the value of this indicator between 1997 and 2007 may reflect shifts in population, significant changes in S&E graduate education, or a combination of both.
- Growth in the number of S&E graduate students was most significant in California during this period. Other states with sizeable increases included Texas, New York, Florida, and Minnesota.

Graduate students in S&E fields may become the technical leaders of the future. The ratio of S&E graduate students to a state's population ages 25–34 years old is a relative measure of a state's population with graduate training in S&E. Graduate students are counted on the basis of their university enrollment and include state residents, residents of other states, and noncitizens. The cohort 25–34 years old was chosen to approximate the age of most graduate students. This population cohort includes all state residents ages 25–34 and does not distinguish between citizens and noncitizens.

Data on S&E graduate students were collected by surveying all academic institutions in the United States that offer doctoral or master's degree programs in any S&E field, including the physical, earth, ocean, atmospheric, biological, agricultural, computer, and social sciences; mathematics; engineering; and psychology. Graduate students enrolled in schools of nursing, public health, dentistry, veterinary medicine, and other health-related disciplines are not included.

Table 8-19
S&E graduate students per 1,000 individuals 25–34 years old, by state: 1997, 2002, and 2007

State	S&E graduate students			Population 25–34 years old			S&E graduate students/1,000 individuals 25–34 years old		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	405,307	451,387	499,024	39,558,339	39,698,462	40,590,926	10.2	11.4	12.3
Alabama.....	5,288	5,704	6,162	625,515	587,727	603,903	8.5	9.7	10.2
Alaska.....	749	736	832	79,364	89,170	100,168	9.4	8.3	8.3
Arizona.....	6,468	7,153	8,157	654,684	781,407	915,523	9.9	9.2	8.9
Arkansas.....	1,853	1,932	2,649	335,763	351,068	378,494	5.5	5.5	7.0
California.....	51,176	58,469	66,792	5,279,694	5,271,205	5,179,032	9.7	11.1	12.9
Colorado.....	8,371	9,620	9,749	545,166	691,900	727,990	15.4	13.9	13.4
Connecticut.....	5,562	7,026	8,643	488,806	431,725	399,838	11.4	16.3	21.6
Delaware.....	1,413	1,564	1,777	119,512	105,900	106,957	11.8	14.8	16.6
District of Columbia.....	7,843	7,783	9,549	104,953	103,017	107,374	74.7	75.6	88.9
Florida.....	13,978	17,465	20,741	1,970,764	2,106,930	2,276,893	7.1	8.3	9.1
Georgia.....	8,481	10,092	11,435	1,217,255	1,315,540	1,374,703	7.0	7.7	8.3
Hawaii.....	1,598	1,657	1,858	160,985	171,531	177,096	9.9	9.7	10.5
Idaho.....	1,426	1,691	1,853	150,552	175,200	207,897	9.5	9.7	8.9
Illinois.....	21,857	24,813	25,281	1,783,545	1,800,397	1,766,903	12.3	13.8	14.3
Indiana.....	8,309	8,840	9,791	854,925	821,411	850,340	9.7	10.8	11.5
Iowa.....	4,617	4,928	5,146	374,757	356,050	363,669	12.3	13.8	14.2
Kansas.....	5,817	6,202	5,638	358,134	346,195	360,118	16.2	17.9	15.7
Kentucky.....	3,507	4,389	4,391	556,431	559,574	586,067	6.3	7.8	7.5
Louisiana.....	5,362	5,928	5,391	601,194	581,665	579,336	8.9	10.2	9.3
Maine.....	584	639	764	172,945	152,953	149,052	3.4	4.2	5.1
Maryland.....	9,163	10,164	11,357	814,881	731,189	719,905	11.2	13.9	15.8
Massachusetts.....	19,274	22,006	23,604	1,014,531	895,476	821,184	19.0	24.6	28.7
Michigan.....	14,708	16,706	15,595	1,423,309	1,321,563	1,256,377	10.3	12.6	12.4
Minnesota.....	6,435	7,248	12,733	669,827	667,582	683,505	9.6	10.9	18.6
Mississippi.....	2,686	2,776	3,142	382,623	374,687	382,061	7.0	7.4	8.2
Missouri.....	5,760	6,828	7,645	754,942	733,432	774,880	7.6	9.3	9.9
Montana.....	1,168	1,328	1,502	98,004	101,874	116,754	11.9	13.0	12.9
Nebraska.....	2,368	2,633	2,874	217,666	220,620	228,308	10.9	11.9	12.6
Nevada.....	1,466	1,662	2,262	253,645	323,849	381,263	5.8	5.1	5.9
New Hampshire.....	1,192	1,444	1,493	185,759	156,636	150,642	6.4	9.2	9.9
New Jersey.....	10,537	11,613	12,468	1,169,347	1,155,785	1,058,894	9.0	10.0	11.8
New Mexico.....	2,970	3,374	3,819	221,752	234,601	261,877	13.4	14.4	14.6
New York.....	38,481	40,114	45,887	2,780,058	2,675,696	2,522,113	13.8	15.0	18.2
North Carolina.....	9,810	11,271	13,170	1,143,569	1,212,062	1,215,863	8.6	9.3	10.8
North Dakota.....	847	1,108	1,485	84,358	73,534	78,531	10.0	15.1	18.9
Ohio.....	16,921	17,159	18,982	1,600,802	1,476,170	1,461,238	10.6	11.6	13.0
Oklahoma.....	3,763	4,484	4,604	433,901	451,368	489,871	8.7	9.9	9.4
Oregon.....	3,805	4,304	4,300	432,385	485,187	523,985	8.8	8.9	8.2
Pennsylvania.....	18,640	19,786	20,643	1,663,839	1,499,828	1,450,797	11.2	13.2	14.2
Rhode Island.....	1,554	1,768	1,961	155,539	137,322	128,693	10.0	12.9	15.2
South Carolina.....	3,562	3,313	3,303	570,554	555,147	572,462	6.2	6.0	5.8
South Dakota.....	851	1,028	891	90,549	90,023	98,407	9.4	11.4	9.1
Tennessee.....	6,151	6,136	6,200	797,574	804,714	843,811	7.7	7.6	7.3
Texas.....	26,779	31,264	35,100	2,857,237	3,248,635	3,505,689	9.4	9.6	10.0
Utah.....	3,908	4,321	4,850	292,936	343,479	432,390	13.3	12.6	11.2
Vermont.....	569	601	630	86,613	72,309	70,148	6.6	8.3	9.0
Virginia.....	11,380	12,805	14,000	1,097,057	1,028,882	1,048,130	10.4	12.4	13.4
Washington.....	5,841	6,129	6,414	817,042	849,669	900,709	7.1	7.2	7.1
West Virginia.....	1,974	2,320	2,276	229,861	224,782	231,369	8.6	10.3	9.8
Wisconsin.....	7,639	8,244	8,415	728,952	691,683	710,393	10.5	11.9	11.8
Wyoming.....	846	819	820	54,283	60,113	69,597	15.6	13.6	11.8
Puerto Rico.....	2,256	3,371	3,280	NA	NA	NA	NA	NA	NA

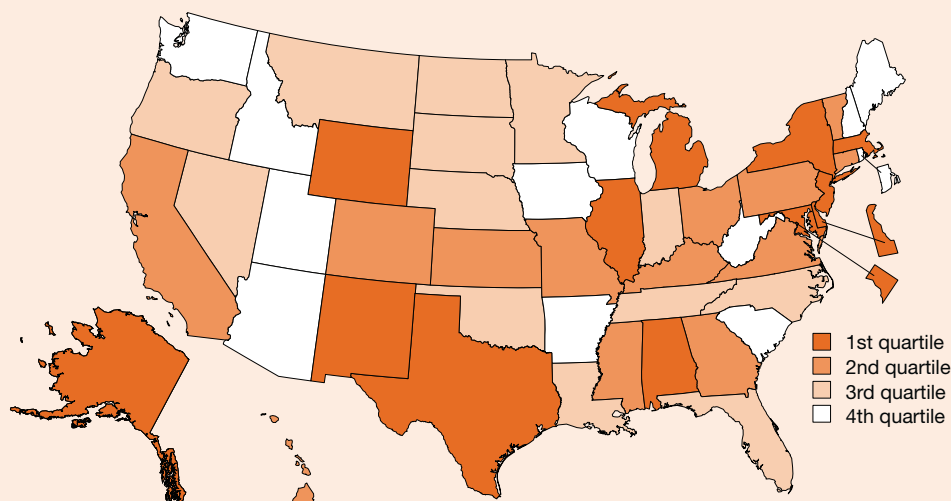
NA = not available

NOTE: S&E graduate students include students pursuing graduate degrees in physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering; and Census Bureau, Population Estimates Program (various years).

Advanced S&E Degrees as Share of S&E Degrees Conferred

Figure 8-20
Advanced S&E degrees as share of S&E degrees conferred: 2007



1st quartile (45.1%–25.3%)	2nd quartile (25.0%–22.0%)	3rd quartile (21.9%–18.4%)	4th quartile (18.3%–8.0%)
Alabama †	California	Florida	Arizona
Alaska †	Colorado	Indiana	Arkansas †
Delaware †	Connecticut	Louisiana †	Idaho †
District of Columbia	Georgia	Minnesota	Iowa
Illinois	Hawaii †	Montana †	Maine †
Maryland	Kansas †	Nebraska †	New Hampshire †
Massachusetts	Kentucky †	Nevada †	Rhode Island †
Michigan	Mississippi †	North Carolina	South Carolina †
New Jersey	Missouri	North Dakota †	Utah
New Mexico †	Ohio	Oklahoma †	Washington
New York	Pennsylvania	Oregon	West Virginia †
Texas	Vermont †	South Dakota †	Wisconsin
Wyoming †	Virginia	Tennessee	

† EPSCoR state

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System. See table 8-20.

Findings

- In 2007, more than 150,000 advanced S&E degrees were awarded nationwide. This total represented approximately 26% more degrees than were awarded in 1997. However, the share of advanced degrees remained stable as a percentage of all S&E degrees conferred.
- In 2007, some states provided more extensive graduate-level technical training, with nearly 34% of their S&E graduates completing training at the master's or doctoral level; other states had much smaller graduate S&E programs, with values as low as 8%.
- The largest absolute increases in the production of advanced S&E degree holders between 1997 and 2007 occurred in California, Illinois, Texas, and New York.
- In states with few S&E graduate programs, the number of advanced S&E degrees conferred varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small S&E graduate programs

This indicator shows the extent to which a state's higher education programs in S&E are concentrated at the graduate level. S&E fields include the physical, earth, ocean, atmospheric, biological, agricultural, computer, and social sciences; mathematics; engineering; and psychology. Advanced S&E degrees include master's and doctoral degrees. Total S&E degrees include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of advanced S&E degrees by the total number of S&E degrees awarded by the higher education institutions within the state.

Table 8-20

Advanced S&E degrees as share of S&E degrees conferred, by state: 1997, 2002, and 2007

State	Advanced S&E degrees			All S&E degrees			Advanced S&E/ all S&E degrees (%)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	119,428	122,569	150,127	503,939	533,788	626,200	23.7	23.0	24.0
Alabama.....	1,863	1,991	2,282	7,199	7,160	8,271	25.9	27.8	27.6
Alaska.....	199	156	235	679	559	725	29.3	27.9	32.4
Arizona.....	1,787	1,612	1,930	6,743	7,538	11,915	26.5	21.4	16.2
Arkansas.....	414	476	552	2,917	3,096	3,226	14.2	15.4	17.1
California.....	12,988	14,942	19,027	56,483	65,685	78,329	23.0	22.7	24.3
Colorado.....	2,906	3,002	3,209	11,306	12,344	13,320	25.7	24.3	24.1
Connecticut.....	1,729	1,752	2,136	6,973	7,008	8,586	24.8	25.0	24.9
Delaware.....	432	389	547	1,929	2,003	2,154	22.4	19.4	25.4
District of Columbia.....	3,036	3,030	3,558	6,566	7,074	7,889	46.2	42.8	45.1
Florida.....	3,926	4,454	5,525	17,252	19,736	25,785	22.8	22.6	21.4
Georgia.....	2,279	2,767	3,272	10,415	12,278	14,646	21.9	22.5	22.3
Hawaii.....	536	443	552	2,046	2,032	2,385	26.2	21.8	23.1
Idaho.....	305	306	481	1,677	1,811	2,649	18.2	16.9	18.2
Illinois.....	6,466	6,786	9,205	21,877	23,368	27,328	29.6	29.0	33.7
Indiana.....	2,455	2,324	2,880	11,590	11,682	13,541	21.2	19.9	21.3
Iowa.....	1,137	1,089	1,256	6,560	6,604	7,364	17.3	16.5	17.1
Kansas.....	1,187	1,135	1,325	5,295	5,424	6,005	22.4	20.9	22.1
Kentucky.....	972	997	1,601	5,020	5,344	6,470	19.4	18.7	24.7
Louisiana.....	1,519	1,453	1,672	6,721	7,073	7,629	22.6	20.5	21.9
Maine.....	221	175	212	2,172	2,300	2,662	10.2	7.6	8.0
Maryland.....	3,483	3,927	4,886	11,867	13,135	15,800	29.4	29.9	30.9
Massachusetts.....	6,496	6,760	7,906	21,879	23,196	25,519	29.7	29.1	31.0
Michigan.....	4,621	4,977	5,557	18,631	19,139	21,374	24.8	26.0	26.0
Minnesota.....	1,665	1,813	2,252	9,265	9,642	11,534	18.0	18.8	19.5
Mississippi.....	730	727	838	3,447	3,558	3,817	21.2	20.4	22.0
Missouri.....	2,751	2,971	3,176	10,603	11,988	12,741	25.9	24.8	24.9
Montana.....	378	364	443	2,128	2,110	2,291	17.8	17.3	19.3
Nebraska.....	546	612	742	3,084	3,090	3,793	17.7	19.8	19.6
Nevada.....	284	278	393	1,218	1,335	2,021	23.3	20.8	19.4
New Hampshire.....	445	440	472	2,953	2,883	3,321	15.1	15.3	14.2
New Jersey.....	2,974	3,258	3,957	12,792	14,316	15,624	23.2	22.8	25.3
New Mexico.....	868	708	854	2,764	2,438	2,863	31.4	29.0	29.8
New York.....	11,419	11,511	13,543	44,186	44,595	51,276	25.8	25.8	26.4
North Carolina.....	2,477	2,694	3,421	14,878	15,132	17,325	16.6	17.8	19.7
North Dakota.....	238	210	312	1,556	1,487	1,644	15.3	14.1	19.0
Ohio.....	5,370	4,489	5,405	19,687	18,920	21,640	27.3	23.7	25.0
Oklahoma.....	1,557	1,698	1,357	5,625	5,861	6,185	27.7	29.0	21.9
Oregon.....	1,284	1,175	1,514	6,145	6,535	7,986	20.9	18.0	19.0
Pennsylvania.....	5,385	5,614	7,193	26,023	27,674	32,641	20.7	20.3	22.0
Rhode Island.....	549	566	648	2,914	3,067	3,597	18.8	18.5	18.0
South Carolina.....	1,004	981	1,079	5,999	6,170	6,981	16.7	15.9	15.5
South Dakota.....	382	314	416	2,012	1,779	2,029	19.0	17.7	20.5
Tennessee.....	1,633	1,386	1,620	8,048	8,013	8,802	20.3	17.3	18.4
Texas.....	7,072	7,164	9,413	27,060	28,592	36,053	26.1	25.1	26.1
Utah.....	1,077	1,006	1,308	6,434	6,739	7,999	16.7	14.9	16.4
Vermont.....	334	287	632	2,035	2,119	2,747	16.4	13.5	23.0
Virginia.....	3,423	3,156	4,126	15,366	15,694	18,369	22.3	20.1	22.5
Washington.....	2,032	1,903	2,310	10,014	10,350	12,632	20.3	18.4	18.3
West Virginia.....	472	492	573	2,559	2,732	3,142	18.4	18.0	18.2
Wisconsin.....	1,852	1,608	2,117	10,390	10,555	12,763	17.8	15.2	16.6
Wyoming.....	270	201	207	957	825	812	28.2	24.4	25.5
Puerto Rico.....	498	784	1,133	4,358	5,044	5,202	11.4	15.5	21.8

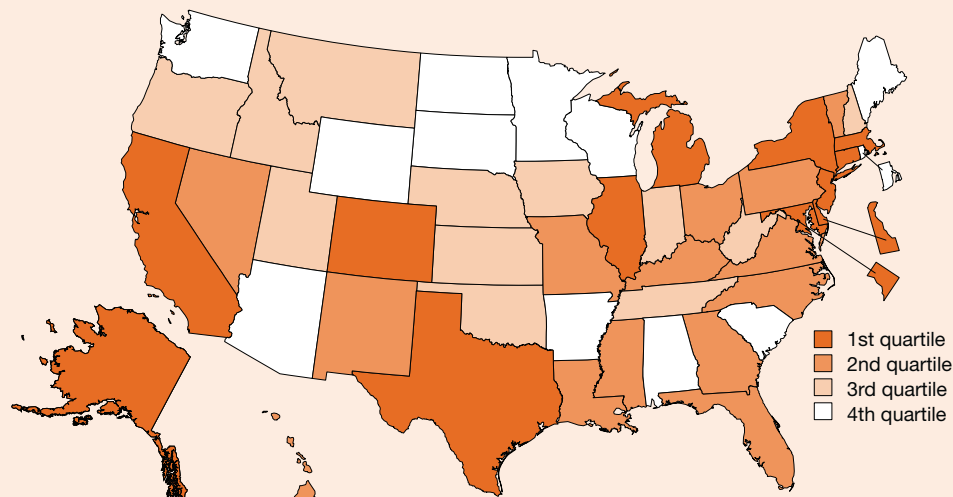
NOTES: "All S&E degrees" includes bachelor's, master's, and doctorate; "advanced S&E degrees" includes only master's and doctorate. S&E degrees include physical, computer, agricultural, biological, earth, atmospheric, ocean, and social sciences; psychology; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Advanced Natural Sciences and Engineering Degrees as Share of Natural Sciences and Engineering Degrees Conferred

Figure 8-21

Advanced natural sciences and engineering degrees as share of natural sciences and engineering degrees conferred: 2007



1st quartile (42.3%–26.8%)	2nd quartile (25.9%–22.3%)	3rd quartile (22.1%–19.8%)	4th quartile (19.5%–12.1%)
Alaska †	Florida	Idaho †	Alabama †
California	Georgia	Indiana	Arizona
Colorado	Hawaii †	Iowa	Arkansas †
Connecticut	Kentucky †	Kansas †	Maine †
Delaware †	Louisiana †	Montana †	Minnesota
District of Columbia	Mississippi †	Nebraska †	North Dakota †
Illinois	Missouri	New Hampshire †	Rhode Island †
Maryland	Nevada †	Oklahoma †	South Carolina †
Massachusetts	New Mexico †	Oregon	South Dakota †
Michigan	North Carolina	Tennessee	Washington
New Jersey	Ohio	Utah	Wisconsin
New York	Pennsylvania	West Virginia †	Wyoming †
Texas	Vermont †		
	Virginia		

† EPSCoR state

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System. See table 8-21.

Findings

- In 2007, nearly 94,000 advanced NS&E degrees were awarded nationwide. This total represented approximately 26% more than were awarded in 1997, but the share of advanced degrees remained stable as a percentage of all NS&E degrees conferred.
- In 2007, some states provided more extensive graduate-level training in NS&E, with nearly 37% of their NS&E graduates completing training at the master's or doctoral level; other states had much smaller graduate NS&E programs, with values as low as 12%.
- The largest absolute increases in the production of advanced NS&E degree holders between 1997 and 2007 occurred in California and Texas.
- In states with few NS&E graduate programs, the number of advanced NS&E degrees conferred varies considerably from year to year. Readers should use caution when making annual comparisons for those states with small NS&E graduate programs.

This indicator shows the extent to which a state's higher education programs in natural sciences and engineering (NS&E) are concentrated at the graduate level. NS&E fields include the physical, earth, ocean, atmospheric, biological, agricultural, and computer sciences; mathematics; and engineering. Social sciences including anthropology, economics, political science and public administration, psychology, and sociology are not included. Advanced NS&E degrees include master's and doctoral degrees. Total NS&E degrees include bachelor's, master's, and doctoral degrees but exclude associate's degrees.

The indicator value is computed by dividing the number of advanced NS&E degrees by the total number of NS&E degrees awarded by the higher education institutions within the state.

Table 8-21

Advanced natural sciences and engineering degrees as share of natural sciences and engineering degrees conferred, by state: 1997, 2002, and 2007

State	Advanced NS&E degrees			NS&E degrees conferred			Advanced NS&E degrees/ NS&E degrees conferred (%)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	74,427	77,551	93,952	300,380	346,643	375,931	24.8	22.4	25.0
Alabama.....	949	931	1,181	4,971	4,842	6,550	19.1	19.2	18.0
Alaska.....	134	107	146	440	338	438	30.5	31.7	33.3
Arizona.....	1,277	1,079	1,258	4,379	5,713	8,569	29.2	18.9	14.7
Arkansas.....	276	331	378	1,751	2,276	2,112	15.8	14.5	17.9
California.....	7,205	8,907	11,496	35,241	40,070	42,934	20.4	22.2	26.8
Colorado.....	2,028	2,147	2,090	6,625	8,100	7,506	30.6	26.5	27.8
Connecticut.....	1,140	1,182	1,535	3,196	3,296	4,206	35.7	35.9	36.5
Delaware.....	237	198	323	1,006	996	1,126	23.6	19.9	28.7
District of Columbia.....	1,243	1,514	1,296	2,963	3,701	3,061	42.0	40.9	42.3
Florida.....	2,412	2,944	3,562	9,334	11,944	14,494	25.8	24.6	24.6
Georgia.....	1,544	1,907	2,348	6,366	8,673	10,230	24.3	22.0	23.0
Hawaii.....	293	242	261	899	976	1,027	32.6	24.8	25.4
Idaho.....	235	243	380	1,298	1,564	1,846	18.1	15.5	20.6
Illinois.....	3,817	4,108	4,988	12,308	15,361	17,106	31.0	26.7	29.2
Indiana.....	1,568	1,471	1,892	7,219	7,967	8,546	21.7	18.5	22.1
Iowa.....	876	798	977	3,966	4,209	4,739	22.1	19.0	20.6
Kansas.....	717	691	789	3,572	3,875	3,638	20.1	17.8	21.7
Kentucky.....	540	612	901	2,960	3,694	4,039	18.2	16.6	22.3
Louisiana.....	1,069	992	1,216	4,249	4,828	4,730	25.2	20.5	25.7
Maine.....	165	116	170	1,220	1,331	1,403	13.5	8.7	12.1
Maryland.....	2,241	2,618	3,312	6,869	8,144	9,891	32.6	32.1	33.5
Massachusetts.....	3,792	4,050	4,814	11,411	12,634	12,988	33.2	32.1	37.1
Michigan.....	3,343	3,748	4,073	12,698	13,977	14,726	26.3	26.8	27.7
Minnesota.....	942	1,121	1,206	4,997	6,909	6,773	18.9	16.2	17.8
Mississippi.....	510	515	645	2,342	2,528	2,773	21.8	20.4	23.3
Missouri.....	1,300	1,283	1,637	6,020	7,367	7,301	21.6	17.4	22.4
Montana.....	283	273	324	1,504	1,669	1,571	18.8	16.4	20.6
Nebraska.....	372	388	529	2,178	2,350	2,533	17.1	16.5	20.9
Nevada.....	192	185	283	740	887	1,234	25.9	20.9	22.9
New Hampshire.....	322	336	349	1,833	2,167	1,726	17.6	15.5	20.2
New Jersey.....	2,120	2,262	2,543	7,441	9,098	8,513	28.5	24.9	29.9
New Mexico.....	573	499	571	1,877	1,886	2,201	30.5	26.5	25.9
New York.....	6,801	6,546	7,685	23,908	26,586	27,486	28.4	24.6	28.0
North Carolina.....	1,736	1,997	2,513	8,388	9,629	10,947	20.7	20.7	23.0
North Dakota.....	179	156	236	1,053	1,115	1,208	17.0	14.0	19.5
Ohio.....	3,369	2,789	3,361	12,290	13,512	14,240	27.4	20.6	23.6
Oklahoma.....	728	798	894	3,688	3,862	4,170	19.7	20.7	21.4
Oregon.....	808	777	925	3,014	3,470	4,220	26.8	22.4	21.9
Pennsylvania.....	3,409	3,649	4,586	15,787	18,537	20,083	21.6	19.7	22.8
Rhode Island.....	339	374	408	1,691	2,017	2,231	20.0	18.5	18.3
South Carolina.....	774	741	771	4,121	4,598	4,486	18.8	16.1	17.2
South Dakota.....	256	198	243	1,336	1,371	1,405	19.2	14.4	17.3
Tennessee.....	1,059	864	1,079	4,638	4,651	5,157	22.8	18.6	20.9
Texas.....	4,925	5,089	6,545	18,346	21,547	24,382	26.8	23.6	26.8
Utah.....	719	666	956	3,749	4,380	4,707	19.2	15.2	20.3
Vermont.....	106	121	294	964	1,045	1,320	11.0	11.6	22.3
Virginia.....	2,309	2,041	2,530	8,669	9,768	10,747	26.6	20.9	23.5
Washington.....	1,313	1,299	1,381	5,897	7,277	7,364	22.3	17.9	18.8
West Virginia.....	319	332	409	1,516	1,817	2,067	21.0	18.3	19.8
Wisconsin.....	1,392	1,180	1,527	6,634	7,232	8,433	21.0	16.3	18.1
Wyoming.....	171	136	136	818	859	748	20.9	15.8	18.2
Puerto Rico.....	204	354	462	3,439	4,082	3,636	5.9	8.7	12.7

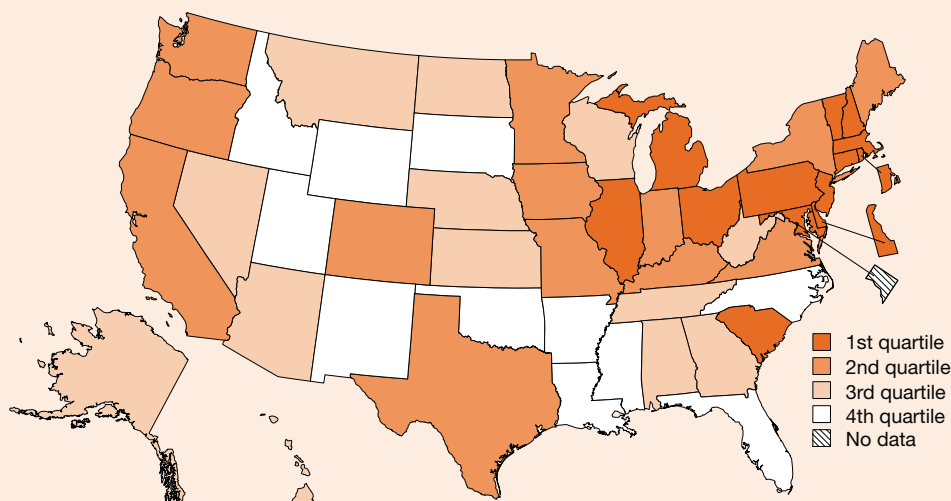
NS&E = natural sciences and engineering

NOTES: "NS&E degrees conferred" includes bachelor's, master's, and doctorate; "advanced NS&E degrees" includes only master's and doctorate. NS&E degrees include physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; mathematics; and engineering.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Average Undergraduate Charge at Public 4-Year Institutions

Figure 8-22
Average undergraduate charge at public 4-year institutions: 2008



1st quartile (\$19,548–\$15,089)	2nd quartile (\$14,893–\$12,367)	3rd quartile (\$12,289–\$10,984)	4th quartile (\$10,889–\$9,479)	No data
Connecticut Delaware † Illinois Maryland Massachusetts Michigan New Hampshire † New Jersey Ohio Pennsylvania Rhode Island † South Carolina † Vermont †	California Colorado Indiana Iowa Kentucky † Maine † Minnesota Missouri New York Oregon Texas Virginia Washington	Alabama † Alaska † Arizona Georgia Hawaii † Kansas † Montana † Nebraska † Nevada † North Dakota † Tennessee West Virginia † Wisconsin	Arkansas † Florida Idaho † Louisiana † Mississippi † New Mexico † North Carolina Oklahoma † South Dakota † Utah Wyoming †	District of Columbia

† EPSCoR state

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System. See table 8-22.

Findings

- During 2008, the total annual nominal charge for a full-time undergraduate student to attend a public 4-year institution averaged \$13,424 nationally, an increase of 76% during the past decade in current dollars. This was equivalent to an increase of approximately 40% after adjusting for inflation.
- All states showed major increases in undergraduate charges at public institutions in 2008, as compared with 1998. In several states, undergraduate charges more than doubled during this period.
- In 2008, the state average for a year of undergraduate education at a public 4-year institution ranged from a low of \$9,479 to a high of \$19,548.
- Tuition and required fees averaged 44% of the total charges at public 4-year institutions in 2008, but individual states had different cost structures.

The average annual charge for an undergraduate student to attend a public 4-year academic institution is one indicator of how accessible higher education is to a state's students. The annual charge includes standard in-state charges for tuition, required fees, room, and board for a full-time undergraduate student who is a resident of that state. These charges were weighted by the number of full-time undergraduates attending each public institution within the state. The total charge for all public 4-year institutions in the state was divided by the total number of full-time undergraduates attending all public 4-year institutions in the state. The year is the end date of the academic year. For example, data for 2008 represent costs for the 2007–08 academic year.

To improve educational attainment, the federal government, state governments, and academic institutions provide various kinds of financial aid that reduce the charge to students. The data in this indicator do not include any adjustments for such financial aid.

Table 8-22

Average undergraduate charge at public 4-year institutions, by state: 1998, 2003, and 2008

(Dollars)

State	1998	2003	2008
United States.....	7,628	9,828	13,424
Alabama.....	6,354	7,931	11,035
Alaska.....	7,131	9,457	11,719
Arizona.....	6,669	8,797	12,289
Arkansas.....	5,890	7,791	10,598
California.....	8,491	10,849	14,893
Colorado.....	7,552	9,179	13,314
Connecticut.....	9,652	11,805	16,263
Delaware.....	9,165	11,523	16,165
District of Columbia.....	NA	NA	NA
Florida.....	6,890	8,762	10,709
Georgia.....	6,924	8,749	10,984
Hawaii.....	NA	8,242	12,202
Idaho.....	6,074	7,585	9,871
Illinois.....	8,537	11,027	16,795
Indiana.....	8,494	10,655	14,096
Iowa.....	6,426	9,185	13,191
Kansas.....	6,098	7,791	11,338
Kentucky.....	5,662	7,691	12,641
Louisiana.....	5,710	6,922	9,479
Maine.....	8,576	10,329	14,791
Maryland.....	9,717	12,332	15,644
Massachusetts.....	8,894	10,818	16,159
Michigan.....	8,947	11,408	16,003
Minnesota.....	7,617	9,983	14,188
Mississippi.....	5,534	8,039	10,776
Missouri.....	7,520	9,395	13,385
Montana.....	6,855	8,966	11,609
Nebraska.....	6,100	8,408	11,852
Nevada.....	7,295	9,001	12,168
New Hampshire.....	9,846	9,415	18,293
New Jersey.....	10,235	13,937	19,548
New Mexico.....	5,459	7,979	10,610
New York.....	9,460	10,984	14,140
North Carolina.....	5,919	8,350	10,889
North Dakota.....	6,264	7,388	11,134
Ohio.....	9,022	12,260	16,354
Oklahoma.....	5,301	6,832	10,600
Oregon.....	8,394	10,548	13,868
Pennsylvania.....	9,769	12,944	17,187
Rhode Island.....	9,962	12,266	15,775
South Carolina.....	7,160	11,139	15,089
South Dakota.....	5,993	7,724	10,522
Tennessee.....	5,788	8,349	11,340
Texas.....	6,313	8,661	12,367
Utah.....	5,953	7,410	9,706
Vermont.....	11,469	14,016	18,245
Virginia.....	8,627	9,538	13,928
Washington.....	7,704	10,816	13,478
West Virginia.....	6,558	8,175	11,426
Wisconsin.....	6,409	8,204	11,747
Wyoming.....	6,450	7,977	10,068
Puerto Rico.....	NA	NA	NA

NA = not available

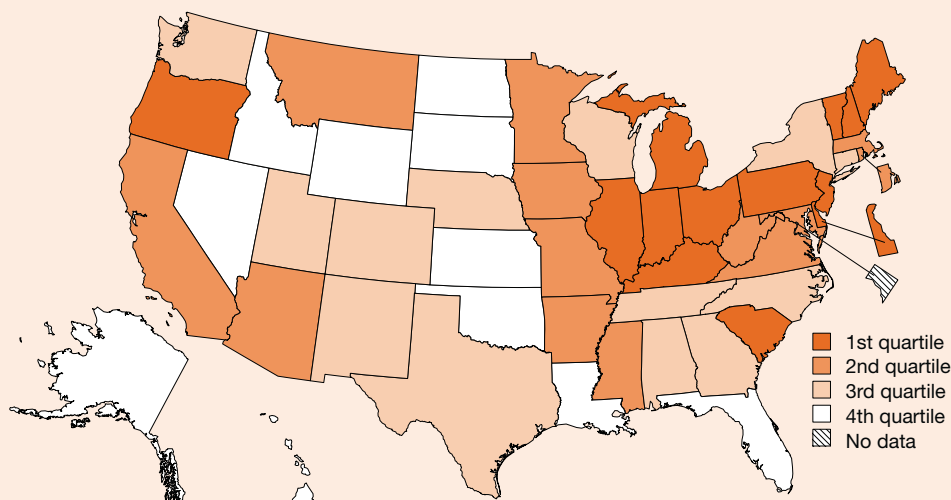
NOTES: National average for United States from Digest of Education Statistics data tables. Average charges for entire academic year (reported in current dollars). Tuition and fees weighted by number of full-time-equivalent undergraduates but not adjusted to reflect student residency. Room and board based on full-time students.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Average Undergraduate Charge at Public 4-Year Institutions as Share of Disposable Personal Income

Figure 8-23

Average undergraduate charge at public 4-year institutions as share of disposable personal income: 2008



1st quartile (52.8%–43.8%)	2nd quartile (43.4%–37.4%)	3rd quartile (36.7%–34.8%)	4th quartile (34.5%–23.1%)	No data
Delaware † Illinois Indiana Kentucky † Maine † Michigan New Hampshire † New Jersey Ohio Oregon Pennsylvania South Carolina † Vermont †	Arizona Arkansas † California Iowa Maryland Massachusetts Minnesota Mississippi † Missouri Montana † Rhode Island † Virginia West Virginia †	Alabama † Colorado Connecticut Georgia Nebraska † New Mexico † New York North Carolina Tennessee Texas Utah Washington Wisconsin	Alaska † Florida Hawaii † Idaho † Kansas † Louisiana † Nevada † North Dakota † Oklahoma † South Dakota † Wyoming †	District of Columbia

† EPSCoR state

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System; and Bureau of Economic Analysis, State and Local Personal Income data. See table 8-23.

Findings

- In 2008, a year of undergraduate education at a state institution would have consumed, on average, 38.4% of a resident's disposable income, an increase from the 32.9% it would have consumed a decade earlier.
- The cost of a year of undergraduate education at a public institution was equivalent to one-quarter to one-half of the per capita disposable income for residents of most states in 2008.
- Although a year of undergraduate education at a public institution became more expensive for residents in most states within the past decade, affordability improved in one state during the past decade as its per capita disposable personal income rose appreciably.
- Residents in six states experienced major increases in the cost of a year of undergraduate education relative to their purchasing power (in excess of 10% of their per capita disposable income) between 1998 and 2008.

This indicator provides a broad measure of how affordable higher education at a public institution is for the average resident. It is calculated by dividing the average undergraduate charge at all public 4-year institutions in the state by the per capita disposable personal income of state residents. The average undergraduate charge includes standard in-state tuition, room, board, and required fees for a student who is a resident of the state. The year is the end date of the academic year. For example, data for 2008 represent costs for the 2007–08 academic year.

Disposable personal income is the income available to state residents for spending or saving. It is calculated as personal income minus personal current taxes paid to federal, state, and local governments.

High values indicate that a year of undergraduate education consumes a high percentage of the disposable personal income of state residents. However, the data in this indicator do not include any adjustment for financial aid that a student might receive.

Table 8-23

Average undergraduate charge at public 4-year institutions as share of disposable personal income, by state: 1998, 2003, and 2008

State	Average undergraduate charge (\$)			Per capita disposable personal income (\$)			Undergraduate charge/disposable personal income (%)		
	1998	2003	2008	1998	2003	2008	1998	2003	2008
United States.....	7,628	9,828	13,424	23,163	28,028	34,949	32.9	35.1	38.4
Alabama.....	6,354	7,931	11,035	19,500	23,969	30,297	32.6	33.1	36.4
Alaska.....	7,131	9,457	11,719	24,401	29,748	39,458	29.2	31.8	29.7
Arizona.....	6,669	8,797	12,289	20,250	24,368	29,391	32.9	36.1	41.8
Arkansas.....	5,890	7,791	10,598	18,146	22,214	28,270	32.5	35.1	37.5
California.....	8,491	10,849	14,893	24,258	29,457	37,041	35.0	36.8	40.2
Colorado.....	7,552	9,179	13,314	24,565	30,331	37,039	30.7	30.3	35.9
Connecticut.....	9,652	11,805	16,263	30,068	36,379	46,775	32.1	32.5	34.8
Delaware.....	9,165	11,523	16,165	23,933	29,605	35,880	38.3	38.9	45.1
District of Columbia ...	NA	NA	NA	30,608	40,583	56,245	NA	NA	NA
Florida.....	6,890	8,762	10,709	22,728	27,495	34,880	30.3	31.9	30.7
Georgia.....	6,924	8,749	10,984	21,792	25,581	30,082	31.8	34.2	36.5
Hawaii.....	NA	8,242	12,202	22,967	27,168	35,939	NA	30.3	34.0
Idaho.....	6,074	7,585	9,871	19,192	23,111	28,638	31.6	32.8	34.5
Illinois.....	8,537	11,027	16,795	25,103	30,025	37,298	34.0	36.7	45.0
Indiana.....	8,494	10,655	14,096	21,572	25,950	30,437	39.4	41.1	46.3
Iowa.....	6,426	9,185	13,191	21,725	25,866	32,919	29.6	35.5	40.1
Kansas.....	6,098	7,791	11,338	22,171	26,803	33,642	27.5	29.1	33.7
Kentucky.....	5,662	7,691	12,641	19,218	23,137	28,424	29.5	33.2	44.5
Louisiana.....	5,710	6,922	9,479	19,385	23,647	32,651	29.5	29.3	29.0
Maine.....	8,576	10,329	14,791	20,576	25,791	31,593	41.7	40.0	46.8
Maryland.....	9,717	12,332	15,644	25,610	32,470	41,325	37.9	38.0	37.9
Massachusetts.....	8,894	10,818	16,159	26,916	34,112	43,134	33.0	31.7	37.5
Michigan.....	8,947	11,408	16,003	23,077	27,936	31,719	38.8	40.8	50.5
Minnesota.....	7,617	9,983	14,188	24,649	30,169	37,300	30.9	33.1	38.0
Mississippi.....	5,534	8,039	10,776	17,593	21,281	27,077	31.5	37.8	39.8
Missouri.....	7,520	9,395	13,385	21,683	26,159	31,339	34.7	35.9	42.7
Montana.....	6,855	8,966	11,609	18,738	23,965	30,627	36.6	37.4	37.9
Nebraska.....	6,100	8,408	11,852	22,392	27,866	33,678	27.2	30.2	35.2
Nevada.....	7,295	9,001	12,168	24,576	28,473	35,768	29.7	31.6	34.0
New Hampshire.....	9,846	9,415	18,293	25,403	31,090	38,304	38.8	30.3	47.8
New Jersey.....	10,235	13,937	19,548	28,914	34,714	43,921	35.4	40.1	44.5
New Mexico.....	5,459	7,979	10,610	18,382	22,631	28,922	29.7	35.3	36.7
New York.....	9,460	10,984	14,140	26,461	31,053	40,254	35.8	35.4	35.1
North Carolina.....	5,919	8,350	10,889	21,400	24,935	30,311	27.7	33.5	35.9
North Dakota.....	6,264	7,388	11,134	20,620	26,469	35,824	30.4	27.9	31.1
Ohio.....	9,022	12,260	16,354	22,405	26,477	31,370	40.3	46.3	52.1
Oklahoma.....	5,301	6,832	10,600	19,161	23,950	33,143	27.7	28.5	32.0
Oregon.....	8,394	10,548	13,868	21,951	26,218	31,643	38.2	40.2	43.8
Pennsylvania.....	9,769	12,944	17,187	23,301	28,433	35,413	41.9	45.5	48.5
Rhode Island.....	9,962	12,266	15,775	23,111	29,022	36,336	43.1	42.3	43.4
South Carolina.....	7,160	11,139	15,089	19,440	23,449	28,556	36.8	47.5	52.8
South Dakota.....	5,993	7,724	10,522	21,251	27,253	34,216	28.2	28.3	30.8
Tennessee.....	5,788	8,349	11,340	21,452	26,133	31,327	27.0	31.9	36.2
Texas.....	6,313	8,661	12,367	22,282	26,865	34,850	28.3	32.2	35.5
Utah.....	5,953	7,410	9,706	18,937	22,742	26,641	31.4	32.6	36.4
Vermont.....	11,469	14,016	18,245	21,515	27,250	34,634	53.3	51.4	52.7
Virginia.....	8,627	9,538	13,928	23,662	29,787	37,194	36.5	32.0	37.4
Washington.....	7,704	10,816	13,478	24,615	29,992	38,009	31.3	36.1	35.5
West Virginia.....	6,558	8,175	11,426	18,068	22,117	27,926	36.3	37.0	40.9
Wisconsin.....	6,409	8,204	11,747	22,382	27,318	32,835	28.6	30.0	35.8
Wyoming.....	6,450	7,977	10,068	21,613	29,691	43,607	29.8	26.9	23.1
Puerto Rico.....	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available

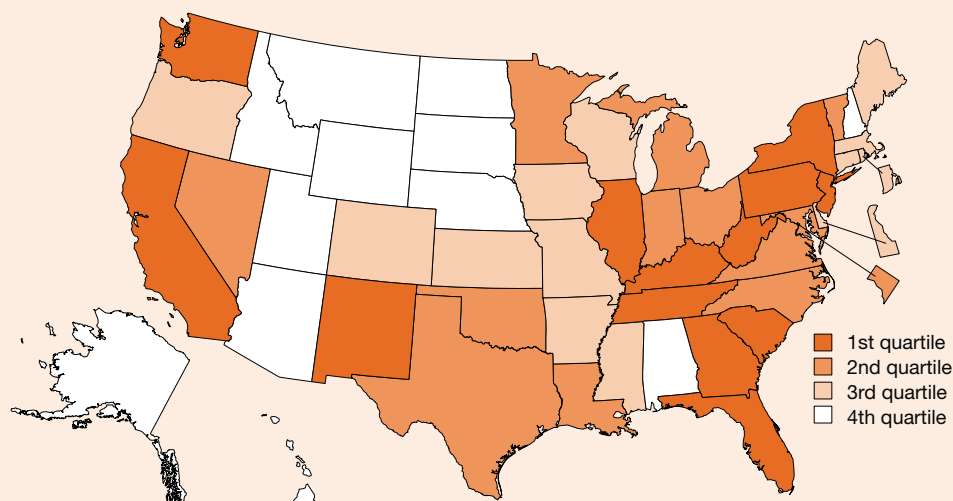
NOTES: National average undergraduate charge for United States from Digest of Education Statistics data tables. Average charges for entire academic year (reported in current dollars). Tuition and fees weighted by number of full-time-equivalent undergraduates but not adjusted to reflect student residency. Room and board based on full-time students. National value for disposable personal income is value reported by Bureau of Economic Analysis.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); and Bureau of Economic Analysis, State and Local Personal Income data.

State Expenditures on Student Aid per Full-Time Undergraduate Student

Figure 8-24

State expenditures on student aid per full-time undergraduate student: 2007



1st quartile (\$2,821–\$1,222)	2nd quartile (\$1,192–\$660)	3rd quartile (\$586–\$226)	4th quartile (\$189–\$17)
California	District of Columbia	Arkansas †	Alabama †
Florida	Indiana	Colorado	Alaska †
Georgia	Louisiana †	Connecticut	Arizona
Illinois	Maryland	Delaware †	Hawaii †
Kentucky †	Michigan	Iowa	Idaho †
New Jersey	Minnesota	Kansas †	Montana †
New Mexico †	Nevada †	Maine †	Nebraska †
New York	North Carolina	Massachusetts	New Hampshire †
Pennsylvania	Ohio	Mississippi †	North Dakota †
South Carolina †	Oklahoma †	Missouri	South Dakota †
Tennessee	Texas	Oregon	Utah
Washington	Vermont †	Rhode Island †	Wyoming †
West Virginia †	Virginia	Wisconsin	

† EPSCoR state

SOURCES: National Association of State Student Grant and Aid Programs, Annual Survey Report; and National Center for Education Statistics, Integrated Postsecondary Education Data System. See table 8-24.

Findings

- The total amount of state financial aid from grants provided to undergraduates rose nationwide from \$3.0 billion in 1997 to \$7.3 billion in 2007.
- On a per-student basis, state funding for student grants across the United States increased from \$568 per undergraduate in 1997 to \$1,029 per undergraduate in 2007 (in current dollars).
- The amount of financial assistance provided by states and the District of Columbia varied greatly in 2007. Nine jurisdictions averaged less than \$100 per undergraduate student, while 16 provided more than \$1,000 per student. Four states reported spending less, in current dollars, per student for student financial aid in 2007 than in 1997, even though the cost of undergraduate education rose rapidly during this period. Three of these four states provided less than \$100 per student.

The cost of an undergraduate education can be reduced with financial assistance from the state or federal government or from an academic institution. This indicator is calculated by dividing the amount of financial support from state grants by the number of full-time undergraduate students who attend both public and private institutions in the state. A high value is one indicator of state efforts to provide access to higher education at a time of escalating undergraduate costs. The actual distribution of state grants to individual students may be affected by the percentage of undergraduates who are state residents.

This indicator should be viewed relative to the tuition charged to undergraduates in a state, as some states have chosen to subsidize tuition for all students at public institutions rather than provide grants. Other differences between states (such as the amount of scholarship aid available from other sources, the percentage of students attending out-of-state institutions, and their eligibility for state funding) mean that readers should exercise caution when making comparisons between states and examining changes over time.

Total state grant expenditures for financial aid include need-based and non-need-based grants. State assistance through subsidized or unsubsidized loans and awards to students at the graduate and first professional degree levels is not included. The year is the end date of the academic year. For example, data for 2007 represent costs for the 2006–07 academic year.

Table 8-24

State expenditures on student aid per full-time undergraduate student, by state: 1997, 2002, and 2007

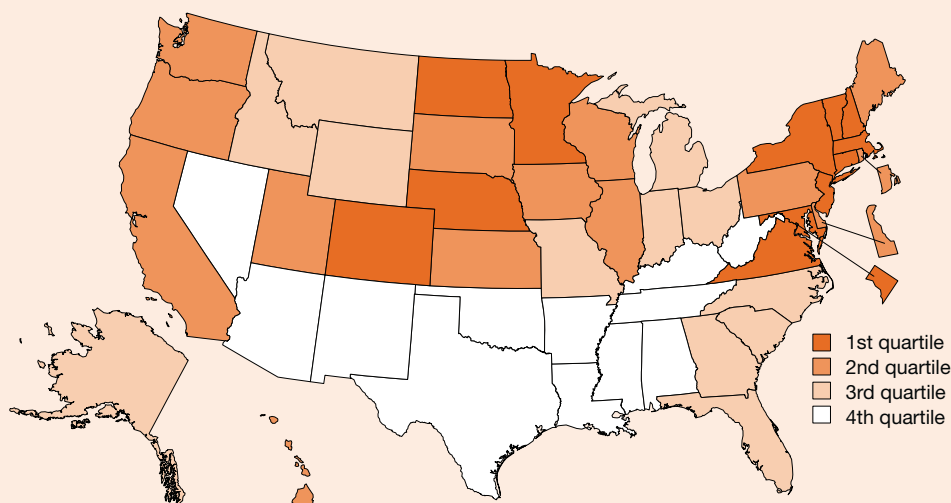
State	State expenditures on student aid (current \$thousands)			Undergraduate enrollment at 4-year institutions			State expenditures on student aid/undergraduate (\$)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	3,014,185	4,999,047	7,339,605	5,302,145	6,156,202	7,133,213	568	812	1,029
Alabama.....	8,163	7,335	8,772	94,855	103,215	115,282	86	71	76
Alaska.....	213	NA	587	10,411	10,899	11,617	20	NA	51
Arizona.....	2,748	2,812	13,231	75,904	118,138	284,069	36	24	47
Arkansas.....	13,725	37,897	30,212	51,954	60,282	67,132	264	629	450
California.....	257,544	514,348	763,008	454,713	551,489	620,961	566	933	1,229
Colorado.....	39,446	60,013	67,300	96,815	108,137	137,785	407	555	488
Connecticut.....	20,299	45,175	41,717	58,564	70,650	79,591	347	639	524
Delaware.....	1,183	1,626	13,489	18,892	22,309	23,026	63	73	586
District of Columbia...	939	1,321	33,666	30,793	36,261	39,588	30	36	850
Florida.....	109,048	321,447	484,227	177,504	247,696	347,718	614	1,298	1,393
Georgia.....	185,867	362,201	480,730	142,198	162,595	198,074	1,307	2,228	2,427
Hawaii.....	379	531	408	19,770	22,630	24,216	19	23	17
Idaho.....	977	4,810	5,750	26,751	40,276	43,060	37	119	134
Illinois.....	298,993	407,622	444,348	208,464	237,251	285,235	1,434	1,718	1,558
Indiana.....	79,149	126,390	200,237	157,992	178,153	202,564	501	709	989
Iowa.....	42,411	51,668	55,535	77,563	87,498	102,432	547	591	542
Kansas.....	10,235	13,099	16,498	63,212	70,546	72,929	162	186	226
Kentucky.....	28,902	86,325	184,399	84,044	91,423	103,830	344	944	1,776
Louisiana.....	16,705	104,117	120,305	116,082	122,627	113,090	144	849	1,064
Maine.....	6,636	12,021	15,556	24,556	28,255	31,378	270	425	496
Maryland.....	42,188	51,910	95,089	80,058	94,159	104,236	527	551	912
Massachusetts.....	57,477	114,600	83,649	182,142	194,274	217,010	316	590	385
Michigan.....	85,872	106,244	206,242	194,897	228,848	245,394	441	464	840
Minnesota.....	92,746	130,408	162,919	103,063	125,283	136,720	900	1,041	1,192
Mississippi.....	590	21,481	22,588	50,169	54,737	58,369	12	392	387
Missouri.....	26,654	43,488	59,768	115,631	133,642	148,534	231	325	402
Montana.....	314	2,810	4,563	27,175	27,882	27,665	12	101	165
Nebraska.....	3,211	7,380	10,388	48,119	49,914	55,104	67	148	189
Nevada.....	3,707	19,899	38,353	16,920	25,774	42,335	219	772	906
New Hampshire.....	679	3,075	3,727	31,568	34,996	38,418	22	88	97
New Jersey.....	161,033	212,195	279,219	104,728	124,387	135,340	1,538	1,706	2,063
New Mexico.....	19,565	39,395	70,518	30,975	35,763	39,322	632	1,102	1,793
New York.....	633,902	699,481	861,448	421,585	484,218	525,797	1,504	1,445	1,638
North Carolina.....	46,248	134,196	221,632	157,278	175,306	206,979	294	765	1,071
North Dakota.....	2,454	1,776	2,238	23,553	27,535	27,994	104	64	80
Ohio.....	128,652	194,039	255,593	235,206	261,671	285,339	547	742	896
Oklahoma.....	22,046	31,464	66,075	71,838	86,968	92,355	307	362	715
Oregon.....	16,241	19,866	33,383	55,434	68,061	72,865	293	292	458
Pennsylvania.....	241,296	337,014	457,980	298,877	339,385	374,628	807	993	1,222
Rhode Island.....	5,699	6,077	13,021	37,890	43,202	48,036	150	141	271
South Carolina.....	21,540	102,039	271,239	74,790	86,528	96,153	288	1,179	2,821
South Dakota.....	346	NA	2,140	23,204	25,328	25,849	15	NA	83
Tennessee.....	19,364	37,915	231,287	112,152	124,302	143,843	173	305	1,608
Texas.....	42,761	199,523	374,730	306,560	361,336	411,776	139	552	910
Utah.....	2,170	4,069	8,566	73,490	89,795	98,342	30	45	87
Vermont.....	11,318	15,636	17,189	21,890	22,208	26,048	517	704	660
Virginia.....	80,064	110,467	149,296	142,237	158,773	195,135	563	696	765
Washington.....	59,631	102,458	184,942	84,623	97,843	121,059	705	1,047	1,528
West Virginia.....	10,527	21,054	77,883	51,761	56,387	56,805	203	373	1,371
Wisconsin.....	52,168	68,167	93,802	133,295	147,367	164,355	391	463	571
Wyoming.....	160	163	163	NA	NA	7,831	NA	NA	21
Puerto Rico.....	23,824	35,602	33,444	112,666	127,677	134,046	211	279	249

NA = not available

SOURCES: National Association of State Student Grant and Aid Programs, Annual Survey Report (various years); and National Center for Education Statistics, Integrated Postsecondary Education Data System (various years).

Associate's Degree Holders or Higher Among Individuals 25–44 Years Old

Figure 8-25
Associate's degree holders or higher among individuals 25–44 years old: 2007



1st quartile (59.1%–43.2%)	2nd quartile (43.0%–37.4%)	3rd quartile (37.2%–33.3%)	4th quartile (32.8%–26.9%)
Colorado Connecticut District of Columbia Maryland Massachusetts Minnesota Nebraska [†] New Hampshire [†] New Jersey New York North Dakota [†] Vermont [†] Virginia	California Delaware [†] Hawaii [†] Illinois Iowa Kansas [†] Maine [†] Oregon Pennsylvania Rhode Island [†] South Dakota [†] Utah Washington Wisconsin	Alaska [†] Florida Georgia Idaho [†] Indiana Michigan Missouri Montana [†] North Carolina Ohio South Carolina [†] Wyoming [†]	Alabama [†] Arizona Arkansas [†] Kentucky [†] Louisiana [†] Mississippi [†] Nevada [†] New Mexico [†] Oklahoma [†] Tennessee Texas West Virginia [†]

[†] EPSCoR state

SOURCES: Census Bureau, 2000 Decennial Census; Population Estimates Program; and American Community Survey. See table 8-25.

Findings

- The early- to mid-career population with at least an associate's degree was 38.3% nationwide in 2007, which represents an increase from 34.7% in 2000.
- Between 2000 and 2007, all states showed an increase in the percentage of their early- to mid-career population with at least an associate's degree.
- In 2007, the percentage of this cohort with at least an associate's degree varied greatly among states, ranging from 51.8% to 26.9%.
- States that ranked highest on this indicator tended to be located in the northern United States.
- States with the lowest cost of living tended to rank lowest on this indicator.

This indicator represents the percentage of the early- to mid-career population that has earned at least a college degree. That degree may be an associate's, bachelor's, master's, or doctoral degree. The indicator represents where college degree holders live rather than where they were educated. The age cohort of 25–44 years represents the group most likely to have completed a college program.

Estimates of educational attainment are developed by the Census Bureau based on the 2000 Decennial Census and the American Community Survey (ACS). The census is conducted every 10 years, but ACS provides annual data on the characteristics of population and housing. In 2005, ACS became the largest household survey in the United States, with an annual sample size of about 3 million addresses. Estimates of population are taken from the Census Bureau's Population Estimates Program, which is also based on the 2000 Decennial Census.

Table 8-25

Associate's degree holders or higher among individuals 25–44 years old, by state: 2000, 2003, and 2007

State	Associate's degree holders or higher 25–44 years old			Population 25–44 years old			Associate's degree holders/individuals 25–44 years old (%)		
	2000	2003	2007	2000	2003	2007	2000	2003	2007
United States.....	29,471,612	30,738,684	31,935,182	85,040,251	84,216,990	83,483,659	34.7	36.5	38.3
Alabama.....	370,196	381,050	388,036	1,288,527	1,241,184	1,234,350	28.7	30.7	31.4
Alaska.....	61,646	58,059	65,635	203,522	194,823	197,222	30.3	29.8	33.3
Arizona.....	472,901	498,703	583,947	1,511,469	1,599,029	1,781,045	31.3	31.2	32.8
Arkansas.....	177,657	187,589	207,170	750,972	738,579	755,981	23.7	25.4	27.4
California.....	3,670,622	3,918,228	3,958,150	10,714,403	10,832,873	10,581,536	34.3	36.2	37.4
Colorado.....	596,036	623,279	635,206	1,400,850	1,417,501	1,448,632	42.5	44.0	43.8
Connecticut.....	443,608	447,818	431,258	1,032,689	999,800	925,266	43.0	44.8	46.6
Delaware.....	84,170	90,649	86,106	236,441	233,356	230,359	35.6	38.8	37.4
District of Columbia...	90,097	100,283	113,684	189,439	188,758	192,511	47.6	53.1	59.1
Florida.....	1,513,345	1,616,842	1,781,351	4,569,347	4,676,558	4,812,179	33.1	34.6	37.0
Georgia.....	884,108	929,979	1,016,236	2,652,764	2,723,720	2,834,749	33.3	34.1	35.8
Hawaii.....	136,758	132,630	149,667	362,336	352,806	353,251	37.7	37.6	42.4
Idaho.....	112,690	121,592	142,792	362,401	370,690	401,380	31.1	32.8	35.6
Illinois.....	1,444,942	1,487,189	1,522,302	3,795,544	3,727,314	3,600,910	38.1	39.9	42.3
Indiana.....	537,644	543,808	590,086	1,791,828	1,748,331	1,734,016	30.0	31.1	34.0
Iowa.....	289,740	294,559	324,136	808,259	775,320	753,784	35.8	38.0	43.0
Kansas.....	282,475	307,608	294,750	769,204	743,961	727,170	36.7	41.3	40.5
Kentucky.....	317,109	335,263	359,918	1,210,773	1,182,970	1,188,087	26.2	28.3	30.3
Louisiana.....	316,348	346,949	312,253	1,293,128	1,230,819	1,159,582	24.5	28.2	26.9
Maine.....	122,958	128,525	131,939	370,597	358,691	337,652	33.2	35.8	39.1
Maryland.....	672,460	714,825	701,070	1,664,677	1,641,907	1,568,230	40.4	43.5	44.7
Massachusetts.....	942,748	970,834	929,041	1,989,783	1,922,446	1,794,769	47.4	50.5	51.8
Michigan.....	982,169	1,026,212	992,470	2,960,544	2,840,435	2,683,585	33.2	36.1	37.0
Minnesota.....	631,677	668,668	680,415	1,497,320	1,465,370	1,423,704	42.2	45.6	47.8
Mississippi.....	208,866	214,703	227,816	807,170	782,327	766,714	25.9	27.4	29.7
Missouri.....	517,750	541,597	567,002	1,626,302	1,587,931	1,579,645	31.8	34.1	35.9
Montana.....	81,428	85,047	86,169	245,220	232,735	235,309	33.2	36.5	36.6
Nebraska.....	185,090	187,939	203,440	487,107	471,024	457,810	38.0	39.9	44.4
Nevada.....	152,536	167,370	214,807	628,572	679,392	761,550	24.3	24.6	28.2
New Hampshire.....	156,434	163,231	159,905	381,240	373,644	351,263	41.0	43.7	45.5
New Jersey.....	1,076,450	1,105,776	1,090,780	2,624,146	2,578,072	2,400,533	41.0	42.9	45.4
New Mexico.....	149,398	142,448	157,903	516,100	506,956	516,167	28.9	28.1	30.6
New York.....	2,359,507	2,432,498	2,465,176	5,831,622	5,667,484	5,383,101	40.5	42.9	45.8
North Carolina.....	844,019	892,169	949,768	2,500,535	2,507,025	2,552,793	33.8	35.6	37.2
North Dakota.....	71,509	70,144	75,163	174,891	160,522	155,217	40.9	43.7	48.4
Ohio.....	1,075,353	1,107,195	1,115,946	3,325,210	3,172,294	3,054,756	32.3	34.9	36.5
Oklahoma.....	276,525	275,638	294,617	975,169	946,358	955,471	28.4	29.1	30.8
Oregon.....	333,963	355,143	393,990	997,269	1,003,698	1,034,933	33.5	35.4	38.1
Pennsylvania.....	1,230,548	1,243,379	1,291,414	3,508,562	3,343,434	3,182,590	35.1	37.2	40.6
Rhode Island.....	117,758	128,487	118,325	310,636	306,459	281,590	37.9	41.9	42.0
South Carolina.....	357,570	370,577	411,754	1,185,955	1,167,347	1,185,520	30.2	31.7	34.7
South Dakota.....	73,128	76,724	81,602	206,399	197,386	197,197	35.4	38.9	41.4
Tennessee.....	489,940	511,871	529,569	1,718,428	1,684,796	1,725,854	28.5	30.4	30.7
Texas.....	1,973,279	2,059,427	2,244,095	6,484,321	6,644,003	6,926,932	30.4	31.0	32.4
Utah.....	222,534	247,337	289,026	626,600	648,111	753,898	35.5	38.2	38.3
Vermont.....	70,277	68,018	69,117	176,456	168,392	157,657	39.8	40.4	43.8
Virginia.....	874,239	904,354	951,423	2,237,655	2,227,978	2,204,242	39.1	40.6	43.2
Washington.....	693,591	721,329	772,894	1,816,217	1,803,610	1,834,696	38.2	40.0	42.1
West Virginia.....	115,337	123,752	130,375	501,343	479,781	473,410	23.0	25.8	27.5
Wisconsin.....	566,244	566,942	596,698	1,581,690	1,537,180	1,499,802	35.8	36.9	39.8
Wyoming.....	44,235	44,448	48,790	138,619	131,810	135,059	31.9	33.7	36.1
Puerto Rico.....	358,595	NA	417,208	1,049,995	1,069,617	NA	34.2	NA	NA

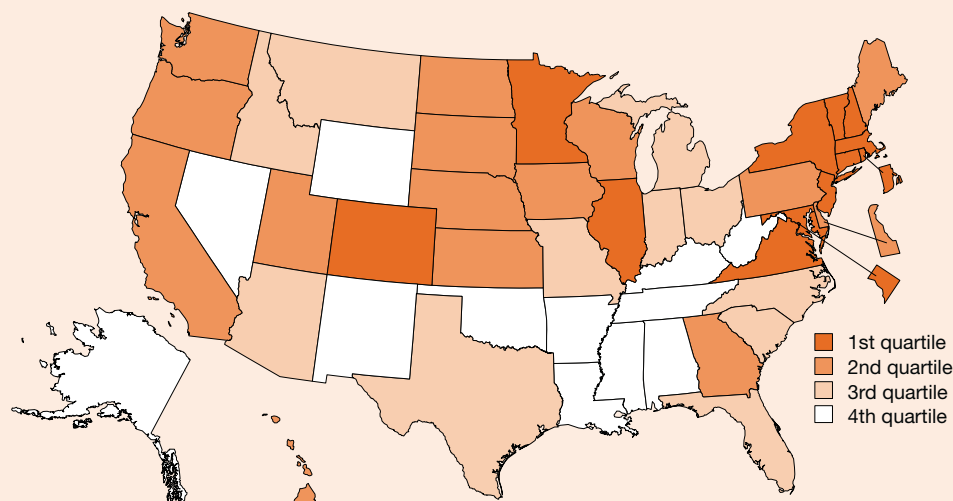
NA = not available

SOURCES: Census Bureau, 2000 Decennial Census; Population Estimates Program (various years); and American Community Survey (various years).

Bachelor's Degree Holders or Higher Among Individuals 25–44 Years Old

Figure 8-26

Bachelor's degree holders or higher among individuals 25–44 years old: 2007



1st quartile (56.4%–33.5%)	2nd quartile (32.3%–28.3%)	3rd quartile (28.1%–24.5%)	4th quartile (24.4%–19.4%)
Colorado Connecticut District of Columbia Illinois Maryland Massachusetts Minnesota New Hampshire † New Jersey New York Rhode Island † Vermont † Virginia	California Delaware † Georgia Hawaii † Iowa Kansas † Maine † Nebraska † North Dakota † Oregon Pennsylvania South Dakota † Utah Washington Wisconsin	Arizona Florida Idaho † Indiana Michigan Missouri Montana † North Carolina Ohio South Carolina † Texas	Alabama † Alaska † Arkansas † Kentucky † Louisiana † Mississippi † Nevada † New Mexico † Oklahoma † Tennessee West Virginia † Wyoming †

† EPSCoR state

SOURCES: Census Bureau, 2000 Decennial Census; Population Estimates Program; and American Community Survey. See table 8-26.

Findings

- The early- to mid-career population with at least a bachelor's degree was 29.8% nationwide in 2007, which represents an increase from 26.8% in 2000.
- All states showed an increase in the percentage of their early-career population with at least a bachelor's degree between 2000 and 2007.
- In 2007, the percentage of the early-career population with at least a bachelor's degree varied among states, ranging from 44.2% to 19.4%. The highest percentages tended to be found in the New England and Middle Atlantic states.
- States with the lowest cost of living tended to rank lowest on this indicator.
- EPSCoR states tended to be clustered in the lower quartiles for this indicator. However, several northern EPSCoR states showed high values.

This indicator represents the percentage of the early- to mid-career population that has earned at least a 4-year undergraduate degree. That degree may be at the bachelor's, master's, or doctoral level. The indicator represents where college degree holders live rather than where they were educated. The age cohort of 25–44 years represents a group of individuals who are potential long-term participants in a state's workforce.

Estimates of educational attainment are developed by the Census Bureau based on the 2000 Decennial Census and the American Community Survey (ACS). The census is conducted every 10 years, but ACS provides annual data on the characteristics of population and housing. In 2005, ACS became the largest household survey in the United States, with an annual sample size of about 3 million addresses. Estimates of population are taken from the Census Bureau's Population Estimates Program, which is also based on the 2000 Decennial Census.

Table 8-26

Bachelor's degree holders or higher among individuals 25–44 years old, by state: 2000, 2003, and 2007

State	Bachelor's degree holders 25–44 years old			Population 25–44 years old			Bachelor's degree holders/individuals 25–44 years old (%)		
	2000	2003	2007	2000	2003	2007	2000	2003	2007
EPSCoR states.....	3,004,954	3,180,725	3,264,082	13,582,778	13,252,012	13,214,968	22.1	24.0	24.7
Non-EPSCoR states.....	19,692,206	20,707,252	21,483,835	71,268,034	70,776,220	70,076,180	27.6	29.3	30.7
Average EPSCoR state value	na	na	na	na	na	na	23.4	25.4	26.3
Average non-EPSCoR state value	na	na	na	na	na	na	28.0	29.7	31.2
United States.....	22,781,996	23,984,096	24,856,576	85,040,251	84,216,990	83,483,659	26.8	28.5	29.8
Alabama.....	275,759	282,805	290,288	1,288,527	1,241,184	1,234,350	21.4	22.8	23.5
Alaska.....	45,560	44,868	48,098	203,522	194,823	197,222	22.4	23.0	24.4
Arizona.....	355,836	374,059	435,697	1,511,469	1,599,029	1,781,045	23.5	23.4	24.5
Arkansas.....	136,883	149,619	151,406	750,972	738,579	755,981	18.2	20.3	20.0
California.....	2,882,717	3,134,086	3,171,265	10,714,403	10,832,873	10,581,536	26.9	28.9	30.0
Colorado.....	480,984	513,973	518,478	1,400,850	1,417,501	1,448,632	34.3	36.3	35.8
Connecticut.....	362,272	380,576	356,702	1,032,689	999,800	925,266	35.1	38.1	38.6
Delaware.....	65,811	73,052	65,103	236,441	233,356	230,359	27.8	31.3	28.3
District of Columbia.....	84,836	96,119	108,659	189,439	188,758	192,511	44.8	50.9	56.4
Florida.....	1,081,551	1,159,165	1,285,284	4,569,347	4,676,558	4,812,179	23.7	24.8	26.7
Georgia.....	718,591	766,181	815,246	2,652,764	2,723,720	2,834,749	27.1	28.1	28.8
Hawaii.....	99,378	97,202	104,925	362,336	352,806	353,251	27.4	27.6	29.7
Idaho.....	80,235	88,937	102,126	362,401	370,690	401,380	22.1	24.0	25.4
Illinois.....	1,149,688	1,191,554	1,225,024	3,795,544	3,727,314	3,600,910	30.3	32.0	34.0
Indiana.....	397,050	404,241	431,559	1,791,828	1,748,331	1,734,016	22.2	23.1	24.9
Iowa.....	202,004	200,579	225,941	808,259	775,320	753,784	25.0	25.9	30.0
Kansas.....	223,467	243,308	230,048	769,204	743,961	727,170	29.1	32.7	31.6
Kentucky.....	234,921	247,142	268,167	1,210,773	1,182,970	1,188,087	19.4	20.9	22.6
Louisiana.....	256,363	283,161	242,865	1,293,128	1,230,819	1,159,582	19.8	23.0	20.9
Maine.....	86,989	92,827	95,436	370,597	358,691	337,652	23.5	25.9	28.3
Maryland.....	566,294	600,135	587,903	1,664,677	1,641,907	1,568,230	34.0	36.6	37.5
Massachusetts.....	773,569	820,821	793,674	1,989,783	1,922,446	1,794,769	38.9	42.7	44.2
Michigan.....	719,607	764,082	753,761	2,960,544	2,840,435	2,683,585	24.3	26.9	28.1
Minnesota.....	476,707	506,833	512,435	1,497,320	1,465,370	1,423,704	31.8	34.6	36.0
Mississippi.....	144,488	149,176	156,955	807,170	782,327	766,714	17.9	19.1	20.5
Missouri.....	407,449	424,660	443,268	1,626,302	1,587,931	1,579,645	25.1	26.7	28.1
Montana.....	62,682	63,186	64,466	245,220	232,735	235,309	25.6	27.1	27.4
Nebraska.....	134,516	138,152	147,777	487,107	471,024	457,810	27.6	29.3	32.3
Nevada.....	111,517	128,178	160,041	628,572	679,392	761,550	17.7	18.9	21.0
New Hampshire.....	114,745	121,639	123,284	381,240	373,644	351,263	30.1	32.6	35.1
New Jersey.....	899,016	932,505	922,809	2,624,146	2,578,072	2,400,533	34.3	36.2	38.4
New Mexico.....	110,360	106,530	116,114	516,100	506,956	516,167	21.4	21.0	22.5
New York.....	1,817,661	1,885,493	1,967,978	5,831,622	5,667,484	5,383,101	31.2	33.3	36.6
North Carolina.....	636,799	682,432	712,815	2,500,535	2,507,025	2,552,793	25.5	27.2	27.9
North Dakota.....	46,291	49,712	49,433	174,891	160,522	155,217	26.5	31.0	31.8
Ohio.....	806,803	835,693	840,228	3,325,210	3,172,294	3,054,756	24.3	26.3	27.5
Oklahoma.....	209,025	211,507	223,073	975,169	946,358	955,471	21.4	22.3	23.3
Oregon.....	257,875	278,460	307,422	997,269	1,003,698	1,034,933	25.9	27.7	29.7
Pennsylvania.....	938,930	959,366	989,049	3,508,562	3,343,434	3,182,590	26.8	28.7	31.1
Rhode Island.....	88,647	101,468	94,366	310,636	306,459	281,590	28.5	33.1	33.5
South Carolina.....	259,773	279,322	297,357	1,185,955	1,167,347	1,185,520	21.9	23.9	25.1
South Dakota.....	51,213	52,989	56,132	206,399	197,386	197,197	24.8	26.8	28.5
Tennessee.....	380,929	393,328	411,337	1,718,428	1,684,796	1,725,854	22.2	23.3	23.8
Texas.....	1,571,951	1,623,020	1,761,431	6,484,321	6,644,003	6,926,932	24.2	24.4	25.4
Utah.....	162,495	174,787	213,575	626,600	648,111	753,898	25.9	27.0	28.3
Vermont.....	52,787	53,121	53,807	176,456	168,392	157,657	29.9	31.5	34.1
Virginia.....	722,081	750,953	788,015	2,237,655	2,227,978	2,204,242	32.3	33.7	35.7
Washington.....	520,382	553,669	577,393	1,816,217	1,803,610	1,834,696	28.7	30.7	31.5
West Virginia.....	83,441	92,148	91,998	501,343	479,781	473,410	16.6	19.2	19.4
Wisconsin.....	402,965	396,601	435,546	1,581,690	1,537,180	1,499,802	25.5	25.8	29.0
Wyoming.....	30,103	30,676	30,817	138,619	131,810	135,059	21.7	23.3	22.8
Puerto Rico.....	245,975	NA	291,498	1,049,995	1,069,617	NA	23.4	NA	NA

na = not applicable; NA = not available

EPSCoR = Experimental Program to Stimulate Competitive Research

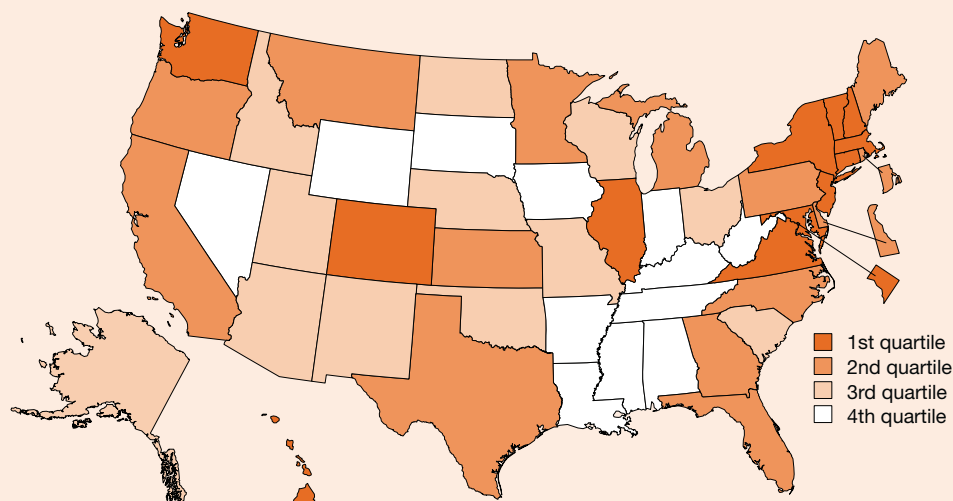
NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: Census Bureau, 2000 Decennial Census; Population Estimates Program (various years); and American Community Survey (various years).

Bachelor's Degree Holders Potentially in the Workforce

Figure 8-27

Bachelor's degree holders potentially in the workforce: 2007



1st quartile (51.1%–32.7%)	2nd quartile (32.6%–28.4%)	3rd quartile (28.3%–26.0%)	4th quartile (25.8%–22.2%)
Colorado Connecticut District of Columbia Hawaii † Illinois Maryland Massachusetts New Hampshire † New Jersey New York Vermont † Virginia Washington	California Delaware † Florida Georgia Kansas † Maine † Michigan Minnesota Montana † North Carolina Oregon Pennsylvania Rhode Island † Texas	Alaska † Arizona Idaho † Missouri Nebraska † New Mexico † North Dakota † Ohio Oklahoma † South Carolina † Utah Wisconsin	Alabama † Arkansas † Indiana Iowa Kentucky † Louisiana † Mississippi † Nevada † South Dakota † Tennessee West Virginia † Wyoming †

† EPSCoR state

SOURCES: Census Bureau, 2000 Decennial Census and American Community Survey; and Bureau of Labor Statistics, Local Area Unemployment Statistics. See table 8-27.

Findings

- In 2007, 47 million individuals between ages 25 and 64 held bachelor's degrees in the United States, up from 39 million in 2000. Nationwide, the ratio of bachelor's degree holders to the size of the workforce rose from 28.5% in 2000 to 30.8% in 2007. This ratio varied considerably among the states, ranging from 22.2% to 42.6% in 2007.
- The value of this indicator increased in most jurisdictions between 2000 and 2007. This increase may reflect a replacement of older cohorts of workers with younger, more educated ones. It may also indicate the restructuring of state economies to emphasize work that requires a higher level of education or credentials.
- The geographic distribution of bachelor's degree holders bears little resemblance to any of the degree production indicators, which may be indicative of the considerable mobility of the college-educated population in the United States.

The ratio of degree holders (bachelor's, graduate, or professional) to the population potentially available for work is an indicator of the concentration of individuals with higher education qualifications in a jurisdiction. This indicator does not imply that all degree holders are currently employed; rather, it indicates the educational level of the workforce if all degree holders were employed. Knowledge-intensive businesses seeking to relocate may be attracted to states with high values on this indicator. Workers with at least a bachelor's degree have a clear advantage over less-educated workers in expected lifetime earnings.

Degree data are based on the U.S. Census Bureau's 2000 Decennial Census and American Community Survey and are limited to individuals 25–64 years old, the age range most representative of a jurisdiction's workforce. Individuals younger than age 25 are considered to be in the process of completing their education. Individuals older than 64 are considered to be largely retired, so their educational attainment would have limited applicability to the quality of the workforce. Civilian workforce data are Bureau of Labor Statistics estimates of employed persons based on Local Area Unemployment Statistics. Estimates for jurisdictions with smaller populations are generally less precise than estimates for jurisdictions with larger populations.

Table 8-27
Bachelor's degree holders potentially in the workforce, by state: 2000, 2003, and 2007

State	Bachelor's degree holders 25–64 years old			Employed workforce			Bachelor's degree holders/workforce (%)		
	2000	2003	2007	2000	2003	2007	2000	2003	2007
United States.....	39,078,598	43,038,717	47,027,346	136,940,378	137,418,377	152,650,836	28.5	31.3	30.8
Alabama.....	479,734	532,098	557,588	2,067,147	2,000,039	2,182,779	23.2	26.6	25.5
Alaska.....	87,739	91,931	99,542	299,324	308,523	352,304	29.3	29.8	28.3
Arizona.....	638,515	689,950	847,406	2,404,916	2,565,030	3,029,090	26.6	26.9	28.0
Arkansas.....	247,079	276,084	303,203	1,207,352	1,199,379	1,367,801	20.5	23.0	22.2
California.....	4,960,210	5,611,074	5,925,276	16,024,341	16,226,987	18,188,055	31.0	34.6	32.6
Colorado.....	819,906	901,534	988,923	2,300,192	2,323,554	2,705,557	35.6	38.8	36.6
Connecticut.....	633,867	695,356	706,405	1,697,670	1,704,693	1,865,483	37.3	40.8	37.9
Delaware.....	111,260	126,828	125,749	402,777	403,504	442,692	27.6	31.4	28.4
District of Columbia....	133,155	148,230	166,334	291,916	283,736	325,562	45.6	52.2	51.1
Florida.....	1,968,126	2,266,930	2,596,402	7,569,406	7,811,887	9,147,797	26.0	29.0	28.4
Georgia.....	1,148,814	1,266,705	1,486,341	4,095,362	4,180,568	4,814,831	28.1	30.3	30.9
Hawaii.....	184,130	196,970	215,385	584,858	588,880	649,080	31.5	33.4	33.2
Idaho.....	149,622	172,807	199,003	632,451	652,627	754,136	23.7	26.5	26.4
Illinois.....	1,876,455	2,032,846	2,190,396	6,176,837	5,942,720	6,697,382	30.4	34.2	32.7
Indiana.....	672,835	707,713	801,095	3,052,719	3,011,436	3,211,461	22.0	23.5	24.9
Iowa.....	351,922	366,596	415,765	1,557,081	1,543,507	1,660,979	22.6	23.8	25.0
Kansas.....	385,924	434,766	445,743	1,351,988	1,364,410	1,478,781	28.5	31.9	30.1
Kentucky.....	402,094	435,777	498,060	1,866,348	1,851,017	2,043,770	21.5	23.5	24.4
Louisiana.....	453,353	512,319	480,089	1,930,662	1,899,642	1,997,873	23.5	27.0	24.0
Maine.....	170,334	193,729	207,589	650,385	655,561	704,693	26.2	29.6	29.5
Maryland.....	979,588	1,083,343	1,141,741	2,711,382	2,750,040	2,980,353	36.1	39.4	38.3
Massachusetts.....	1,266,113	1,370,101	1,450,619	3,273,281	3,211,853	3,408,197	38.7	42.7	42.6
Michigan.....	1,242,388	1,378,696	1,435,481	4,953,421	4,681,180	5,019,984	25.1	29.5	28.6
Minnesota.....	783,613	891,852	938,351	2,720,492	2,765,997	2,930,553	28.8	32.2	32.0
Mississippi.....	256,581	279,111	297,806	1,239,859	1,228,526	1,314,811	20.7	22.7	22.7
Missouri.....	695,491	776,798	834,879	2,875,336	2,819,935	3,031,187	24.2	27.5	27.5
Montana.....	124,462	130,542	144,380	446,552	447,679	501,349	27.9	29.2	28.8
Nebraska.....	230,857	244,248	273,457	923,198	932,870	983,438	25.0	26.2	27.8
Nevada.....	206,361	241,719	309,343	1,015,221	1,092,651	1,335,852	20.3	22.1	23.2
New Hampshire.....	207,431	226,741	252,305	675,541	684,348	738,314	30.7	33.1	34.2
New Jersey.....	1,510,429	1,639,510	1,744,741	4,130,310	4,126,674	4,466,275	36.6	39.7	39.1
New Mexico.....	226,334	232,196	259,419	810,024	832,639	943,062	27.9	27.9	27.5
New York.....	3,031,927	3,275,249	3,561,887	8,751,441	8,713,529	9,519,301	34.6	37.6	37.4
North Carolina.....	1,044,025	1,155,486	1,324,014	3,969,235	3,965,695	4,519,186	26.3	29.1	29.3
North Dakota.....	80,545	91,105	96,019	335,780	335,453	365,598	24.0	27.2	26.3
Ohio.....	1,375,311	1,480,377	1,598,059	5,573,154	5,502,110	5,976,510	24.7	26.9	26.7
Oklahoma.....	383,381	414,535	451,047	1,609,522	1,597,338	1,732,703	23.8	26.0	26.0
Oregon.....	488,862	533,853	613,549	1,716,954	1,704,397	1,927,802	28.5	31.3	31.8
Pennsylvania.....	1,618,658	1,736,241	1,896,406	5,830,902	5,818,296	6,287,116	27.8	29.8	30.2
Rhode Island.....	156,862	185,148	184,117	520,758	535,458	576,987	30.1	34.6	31.9
South Carolina.....	454,656	521,905	575,269	1,902,029	1,868,309	2,136,516	23.9	27.9	26.9
South Dakota.....	89,855	95,907	108,977	397,678	405,840	442,555	22.6	23.6	24.6
Tennessee.....	649,844	719,592	784,298	2,756,498	2,720,676	3,036,736	23.6	26.4	25.8
Texas.....	2,646,909	2,892,917	3,278,378	9,896,002	10,260,318	11,492,422	26.7	28.2	28.5
Utah.....	276,360	292,932	374,739	1,097,915	1,132,948	1,361,768	25.2	25.9	27.5
Vermont.....	103,476	113,291	121,452	326,742	333,788	353,861	31.7	33.9	34.3
Virginia.....	1,232,454	1,361,804	1,505,597	3,502,524	3,646,114	4,054,199	35.2	37.3	37.1
Washington.....	932,352	1,037,358	1,131,129	2,898,677	2,916,045	3,408,191	32.2	35.6	33.2
West Virginia.....	157,883	179,117	186,093	764,649	742,990	808,840	20.6	24.1	23.0
Wisconsin.....	690,065	732,493	829,718	2,894,884	2,866,994	3,089,321	23.8	25.5	26.9
Wyoming.....	60,451	64,307	67,782	256,685	259,987	287,743	23.6	24.7	23.6
Puerto Rico.....	378,586	NA	485,235	1,162,153	1,200,322	1,393,808	32.6	NA	34.8

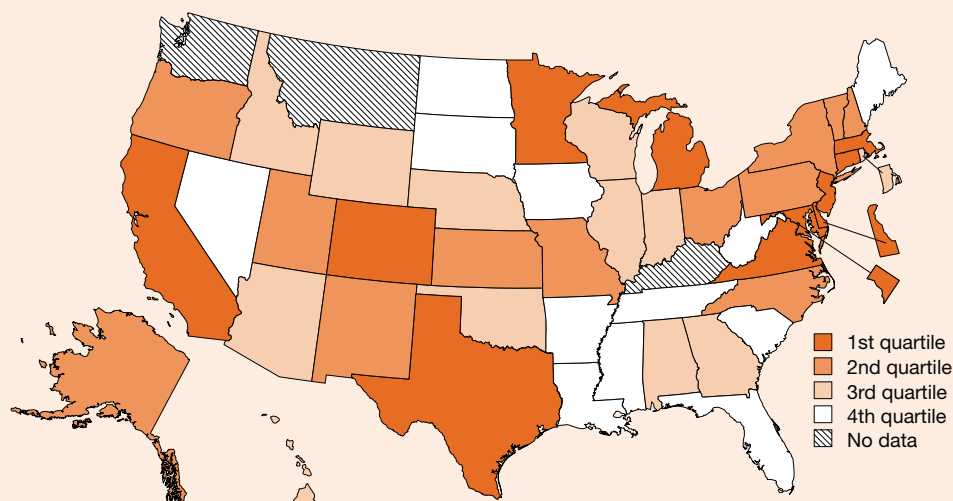
NA = not available

NOTES: Bachelor's degree holders include those who completed a bachelor's or higher degree. Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted.

SOURCES: Census Bureau, 2000 Decennial Census and American Community Survey (various years); and Bureau of Labor Statistics, Local Area Unemployment Statistics.

Individuals in S&E Occupations as Share of Workforce

Figure 8-28
Individuals in S&E occupations as share of workforce: 2008



1st quartile (19.04%–3.96%)	2nd quartile (3.95%–3.37%)	3rd quartile (3.35%–2.80%)	4th quartile (2.76%–1.99%)	No data
California Colorado Connecticut Delaware † District of Columbia Maryland Massachusetts Michigan Minnesota New Jersey Texas Virginia	Alaska † Kansas † Missouri New Hampshire † New Mexico † New York North Carolina Ohio Oregon Pennsylvania Utah Vermont †	Alabama † Arizona Georgia Hawaii † Idaho † Illinois Indiana Nebraska † Oklahoma † Rhode Island † Wisconsin Wyoming †	Arkansas † Florida Iowa Louisiana † Maine † Mississippi † Nevada † North Dakota † South Carolina † South Dakota † Tennessee West Virginia †	Kentucky † Montana † Washington

† EPSCoR state

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics. See table 8-28.

Findings

- In 2008, 3.8% of the U.S. workforce (about 5.8 million people) worked in occupations classified as S&E.
- In 2008, the percentage of the workforce engaged in S&E occupations ranged from 2.0% to 6.4% in individual states.
- The highest percentages of S&E occupations were found in the District of Columbia and the adjacent states of Maryland and Virginia as well as in Massachusetts and Colorado in 2008.
- EPSCoR states tended to cluster in the lower quartiles of this indicator, indicating that their workforces contained a smaller percentage of individuals in S&E occupations.

This indicator shows the extent to which a state's workforce is employed in S&E occupations. A high value for this indicator shows that a state's economy has a high percentage of technical jobs relative to other states.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. They exclude managers, technicians, elementary and secondary schoolteachers, and medical personnel.

State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work. The survey is conducted as part of a cooperative program between the Bureau of Labor Statistics (BLS) and state employment security agencies. State data on the size of the civilian workforce are BLS estimates based on the Current Population Survey, which assigns workers to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Because OES data do not classify postsecondary teachers by field, in these data, faculty teaching in S&E fields are not counted as working in S&E occupations. Estimates for jurisdictions with smaller populations are generally less precise than estimates for jurisdictions with larger populations.

Table 8-28
Individuals in S&E occupations as share of workforce, by state: 2004, 2006, and 2008

State	S&E occupations			Employed workforce			Workforce in S&E occupations (%)		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
United States.....	5,085,740	5,407,710	5,781,460	139,213,523	144,581,912	153,999,337	3.65	3.74	3.75
Alabama.....	57,560	66,100	68,580	2,014,678	2,120,573	2,162,479	2.86	3.12	3.17
Alaska.....	10,660	10,720	13,260	312,922	323,531	357,136	3.41	3.31	3.71
Arizona.....	95,380	98,110	102,100	2,649,243	2,854,381	3,132,667	3.60	3.44	3.26
Arkansas.....	22,150	24,860	29,310	1,228,163	1,292,886	1,370,259	1.80	1.92	2.14
California.....	693,670	730,010	791,750	16,444,457	17,029,307	18,391,844	4.22	4.29	4.30
Colorado.....	126,280	133,730	147,000	2,384,562	2,537,037	2,730,447	5.30	5.27	5.38
Connecticut.....	82,820	79,380	80,290	1,714,758	1,765,075	1,876,125	4.83	4.50	4.28
Delaware.....	17,980	21,550	22,330	408,022	424,506	442,902	4.41	5.08	5.04
District of Columbia....	57,750	64,120	63,360	285,567	296,957	332,703	20.22	21.59	19.04
Florida.....	229,950	246,190	248,200	8,056,259	8,692,761	9,231,462	2.85	2.83	2.69
Georgia.....	141,710	136,470	147,380	4,522,465	4,522,025	4,847,650	3.33	3.02	3.04
Hawaii.....	16,360	18,940	18,830	597,147	628,277	654,261	2.74	3.01	2.88
Idaho.....	22,310	NA	23,310	670,746	723,621	754,879	3.33	NA	3.09
Illinois.....	219,530	222,470	224,370	6,012,320	6,315,715	6,697,335	3.65	3.52	3.35
Indiana.....	79,120	80,110	90,840	3,017,271	3,108,806	3,230,367	2.62	2.58	2.81
Iowa.....	39,280	43,670	46,180	1,542,342	1,602,849	1,675,981	2.55	2.72	2.76
Kansas.....	52,020	48,620	54,260	1,378,713	1,400,169	1,496,943	3.77	3.47	3.62
Kentucky.....	44,350	44,680	NA	1,859,902	1,922,163	2,042,915	2.38	2.32	NA
Louisiana.....	42,230	40,180	41,790	1,926,594	1,910,348	2,078,935	2.19	2.10	2.01
Maine.....	15,160	15,950	17,000	661,163	678,843	706,829	2.29	2.35	2.41
Maryland.....	154,310	159,470	167,070	2,766,653	2,892,620	2,997,709	5.58	5.51	5.57
Massachusetts.....	186,260	198,670	217,310	3,204,653	3,234,860	3,424,018	5.81	6.14	6.35
Michigan.....	183,140	208,520	204,290	4,694,981	4,730,291	4,935,584	3.90	4.41	4.14
Minnesota.....	119,380	125,930	134,440	2,781,744	2,822,297	2,932,961	4.29	4.46	4.58
Mississippi.....	23,190	24,910	27,270	1,234,167	1,218,664	1,314,444	1.88	2.04	2.07
Missouri.....	87,200	96,420	105,390	2,821,802	2,885,857	3,012,126	3.09	3.34	3.50
Montana.....	11,390	13,010	NA	456,624	478,162	506,159	2.49	2.72	NA
Nebraska.....	31,720	32,500	31,820	940,047	945,270	995,635	3.37	3.44	3.20
Nevada.....	23,980	26,930	27,300	1,134,550	1,240,868	1,373,462	2.11	2.17	1.99
New Hampshire.....	24,350	27,680	29,150	693,648	711,512	738,858	3.51	3.89	3.95
New Jersey.....	165,150	176,460	198,060	4,177,841	4,309,021	4,496,727	3.95	4.10	4.40
New Mexico.....	33,500	30,800	34,560	850,164	895,623	959,458	3.94	3.44	3.60
New York.....	272,930	306,810	326,510	8,810,155	9,072,733	9,679,617	3.10	3.38	3.37
North Carolina.....	135,380	138,790	153,680	4,028,598	4,250,619	4,543,754	3.36	3.27	3.38
North Dakota.....	8,420	9,360	9,450	338,221	346,359	369,671	2.49	2.70	2.56
Ohio.....	180,360	185,190	206,320	5,507,404	5,609,056	5,971,874	3.27	3.30	3.45
Oklahoma.....	NA	50,770	48,900	1,608,849	1,650,877	1,748,416	NA	3.08	2.80
Oregon.....	62,570	64,520	70,070	1,722,058	1,796,165	1,957,953	3.63	3.59	3.58
Pennsylvania.....	195,730	214,910	227,170	5,889,957	6,009,858	6,394,884	3.32	3.58	3.55
Rhode Island.....	19,660	18,060	18,090	531,121	547,618	567,597	3.70	3.30	3.19
South Carolina.....	51,030	53,230	57,770	1,900,122	1,988,378	2,152,965	2.69	2.68	2.68
South Dakota.....	9,420	10,120	11,870	409,263	417,100	444,890	2.30	2.43	2.67
Tennessee.....	65,120	67,040	72,760	2,733,793	2,835,530	3,041,276	2.38	2.36	2.39
Texas.....	383,180	408,710	463,850	10,456,224	10,921,673	11,701,585	3.66	3.74	3.96
Utah.....	43,030	49,690	52,570	1,169,163	1,272,801	1,383,743	3.68	3.90	3.80
Vermont.....	11,770	12,780	12,360	337,709	348,026	355,432	3.49	3.67	3.48
Virginia.....	220,180	251,720	259,280	3,704,593	3,878,988	4,124,766	5.94	6.49	6.29
Washington.....	154,610	171,780	NA	3,008,352	3,160,350	3,476,766	5.14	5.44	NA
West Virginia.....	16,100	17,150	17,000	744,034	767,134	806,152	2.16	2.24	2.11
Wisconsin.....	95,230	96,860	101,680	2,871,034	2,918,155	3,084,130	3.32	3.32	3.30
Wyoming.....	6,760	7,640	8,850	263,705	275,617	292,606	2.56	2.77	3.02
Puerto Rico.....	20,410	23,850	22,970	1,226,251	1,260,703	1,366,307	1.66	1.89	1.68

NA = not available

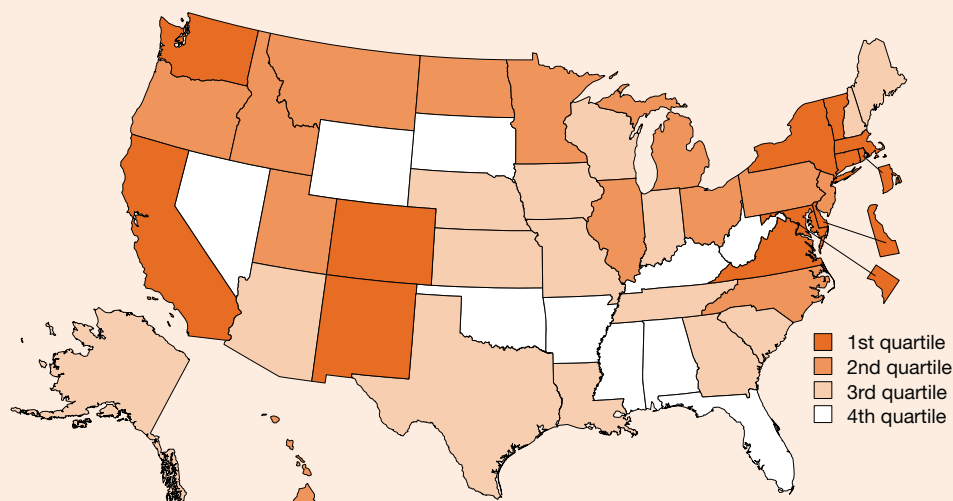
NOTE: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES). OES estimates for 2004, 2006, and 2008 S&E occupations based on May data.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics.

Employed S&E Doctorate Holders as Share of Workforce

Figure 8-29

Employed S&E doctorate holders as share of workforce: 2006



1st quartile (4.49%–0.49%)	2nd quartile (0.48%–0.37%)	3rd quartile (0.35%–0.29%)	4th quartile (0.28%–0.20%)
California Colorado Connecticut Delaware † District of Columbia Maryland Massachusetts New Mexico † New York Rhode Island † Vermont † Virginia Washington	Hawaii † Idaho † Illinois Michigan Minnesota Montana † New Jersey North Carolina North Dakota † Ohio Oregon Pennsylvania Utah	Alaska † Arizona Georgia Indiana Iowa Kansas † Louisiana † Maine † Missouri Nebraska † New Hampshire † South Carolina † Tennessee Texas Wisconsin	Alabama † Arkansas † Florida Kentucky † Mississippi † Nevada † Oklahoma † South Dakota † West Virginia † Wyoming †

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients; and Bureau of Labor Statistics, Local Area Unemployment Statistics. See table 8-29.

Findings

- The number of employed S&E doctorate holders in the United States rose from 517,000 in 1997 to 618,000 in 2006, an increase of 20%.
- Overall, the value of this indicator rose from 0.39% in 1996 to 0.43% in 2006 because the number of employed S&E doctorate holders nationwide increased more rapidly than the size of the workforce.
- In 2006, the values for this indicator in individual states ranged from 0.20% to 1.00% of a state's workforce.
- States in the top quartile tended to be home to major research laboratories, research universities, or research-intensive industries.
- EPSCoR states tended to be clustered in the lower two quartiles for this indicator, reflecting the fact that lower levels of federal support reduce job opportunities for S&E doctorate holders.

This indicator shows a state's ability to attract and retain highly trained scientists and engineers. These individuals often conduct R&D, manage R&D activities, or are otherwise engaged in knowledge-intensive activities. A high value for this indicator in a state suggests employment opportunities for individuals with highly advanced training in S&E fields.

Data on employed S&E doctorate holders include those with doctoral degrees in computer and mathematical sciences; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data derive from the National Science Foundation's Survey of Doctorate Recipients, which excludes individuals with doctorates from foreign institutions and those above the age of 75. The Survey of Doctorate Recipients is a sample survey. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders are presented by employment location regardless of residence.

Civilian workforce data are Bureau of Labor Statistics estimates from the Local Area Unemployment Statistics, which bases location on residence. Workforce data represent annual estimates of the employed civilian labor force; estimates are not seasonally adjusted.

Table 8-29

Employed S&E doctorate holders as share of workforce, by state: 1997, 2001, and 2006

State	Employed S&E doctorate holders ^a			Employed workforce			S&E doctorate holders in workforce (%)		
	1997	2001	2006	1997	2001	2006	1997	2001	2006
United States.....	516,560	572,800	618,370	130,988,267	137,115,199	144,581,912	0.39	0.42	0.43
Alabama.....	6,610	5,330	5,900	2,035,156	2,034,909	2,120,573	0.32	0.26	0.28
Alaska.....	1,110	1,200	1,110	289,963	301,694	323,531	0.38	0.40	0.34
Arizona.....	6,280	7,070	8,410	2,196,901	2,453,453	2,854,381	0.29	0.29	0.29
Arkansas.....	2,320	2,560	2,840	1,177,143	1,194,024	1,292,886	0.20	0.21	0.22
California.....	70,490	80,870	87,370	14,780,791	16,220,033	17,029,307	0.48	0.50	0.51
Colorado.....	10,740	11,780	13,150	2,154,294	2,303,494	2,537,037	0.50	0.51	0.52
Connecticut.....	8,770	9,490	10,330	1,674,937	1,700,046	1,765,075	0.52	0.56	0.59
Delaware.....	3,710	3,540	3,110	378,117	404,135	424,506	0.98	0.88	0.73
District of Columbia....	11,800	14,200	13,330	262,789	286,649	296,957	4.49	4.95	4.49
Florida.....	13,330	15,740	17,630	7,040,660	7,624,718	8,692,761	0.19	0.21	0.20
Georgia.....	9,880	11,990	12,940	3,751,699	4,112,868	4,522,025	0.26	0.29	0.29
Hawaii.....	2,550	2,580	2,850	566,766	589,216	628,277	0.45	0.44	0.45
Idaho.....	2,030	2,230	2,840	598,004	644,816	723,621	0.34	0.35	0.39
Illinois.....	21,260	22,110	24,110	5,988,296	6,113,536	6,315,715	0.36	0.36	0.38
Indiana.....	7,570	9,580	9,870	3,014,499	3,020,985	3,108,806	0.25	0.32	0.32
Iowa.....	4,120	4,390	4,890	1,555,837	1,568,638	1,602,849	0.26	0.28	0.31
Kansas.....	3,770	3,970	4,250	1,329,797	1,347,715	1,400,169	0.28	0.29	0.30
Kentucky.....	4,110	4,590	4,990	1,809,785	1,852,056	1,922,163	0.23	0.25	0.26
Louisiana.....	5,360	5,290	5,470	1,890,102	1,922,110	1,910,348	0.28	0.28	0.29
Maine.....	2,150	1,990	2,350	624,410	650,699	678,843	0.34	0.31	0.35
Maryland.....	21,020	22,730	26,220	2,646,200	2,712,268	2,892,620	0.79	0.84	0.91
Massachusetts.....	23,330	29,100	32,360	3,158,851	3,275,343	3,234,860	0.74	0.89	1.00
Michigan.....	15,050	17,380	17,900	4,748,691	4,876,338	4,730,291	0.32	0.36	0.38
Minnesota.....	9,810	11,410	11,850	2,605,673	2,755,808	2,822,297	0.38	0.41	0.42
Mississippi.....	3,000	3,170	3,310	1,200,845	1,229,884	1,218,664	0.25	0.26	0.27
Missouri.....	9,490	9,280	9,230	2,780,185	2,867,853	2,885,857	0.34	0.32	0.32
Montana.....	1,690	1,440	1,990	427,504	447,827	478,162	0.40	0.32	0.42
Nebraska.....	3,010	2,890	2,970	904,492	925,783	945,270	0.33	0.31	0.31
Nevada.....	1,620	2,030	2,620	895,258	1,042,182	1,240,868	0.18	0.19	0.21
New Hampshire.....	2,230	2,470	2,440	635,469	680,706	711,512	0.35	0.36	0.34
New Jersey.....	20,440	22,740	20,840	4,031,022	4,117,543	4,309,021	0.51	0.55	0.48
New Mexico.....	7,480	7,750	8,330	768,596	821,003	895,623	0.97	0.94	0.93
New York.....	40,080	43,980	45,840	8,416,544	8,743,924	9,072,733	0.48	0.50	0.51
North Carolina.....	13,730	16,760	18,880	3,809,601	3,929,977	4,250,619	0.36	0.43	0.44
North Dakota.....	1,350	1,080	1,380	335,854	336,228	346,359	0.40	0.32	0.40
Ohio.....	18,700	20,070	20,540	5,448,161	5,566,735	5,609,056	0.34	0.36	0.37
Oklahoma.....	4,580	4,360	4,420	1,543,105	1,614,627	1,650,877	0.30	0.27	0.27
Oregon.....	6,210	7,040	8,280	1,652,997	1,711,041	1,796,165	0.38	0.41	0.46
Pennsylvania.....	23,940	26,140	29,090	5,775,178	5,874,153	6,009,858	0.41	0.45	0.48
Rhode Island.....	2,450	2,640	3,020	504,147	520,677	547,618	0.49	0.51	0.55
South Carolina.....	4,780	5,130	5,920	1,819,508	1,842,291	1,988,378	0.26	0.28	0.30
South Dakota.....	1,060	1,000	1,050	383,216	400,352	417,100	0.28	0.25	0.25
Tennessee.....	8,520	8,980	9,980	2,640,005	2,728,523	2,835,530	0.32	0.33	0.35
Texas.....	28,570	32,490	35,970	9,395,279	9,991,920	10,921,673	0.30	0.33	0.33
Utah.....	4,800	4,820	5,540	1,034,429	1,108,547	1,272,801	0.46	0.43	0.44
Vermont.....	1,750	1,750	1,700	315,806	330,099	348,026	0.55	0.53	0.49
Virginia.....	15,250	17,460	19,790	3,323,266	3,537,719	3,878,988	0.46	0.49	0.51
Washington.....	13,360	14,760	16,920	2,822,223	2,863,705	3,160,350	0.47	0.52	0.54
West Virginia.....	1,980	1,890	2,020	746,442	758,904	767,134	0.27	0.25	0.26
Wisconsin.....	8,460	8,720	9,500	2,855,830	2,897,937	2,918,155	0.30	0.30	0.33
Wyoming.....	860	840	730	243,944	259,508	275,617	0.35	0.32	0.26
Puerto Rico.....	660	1,410	1,690	1,132,658	1,133,988	1,260,703	0.06	0.12	0.13

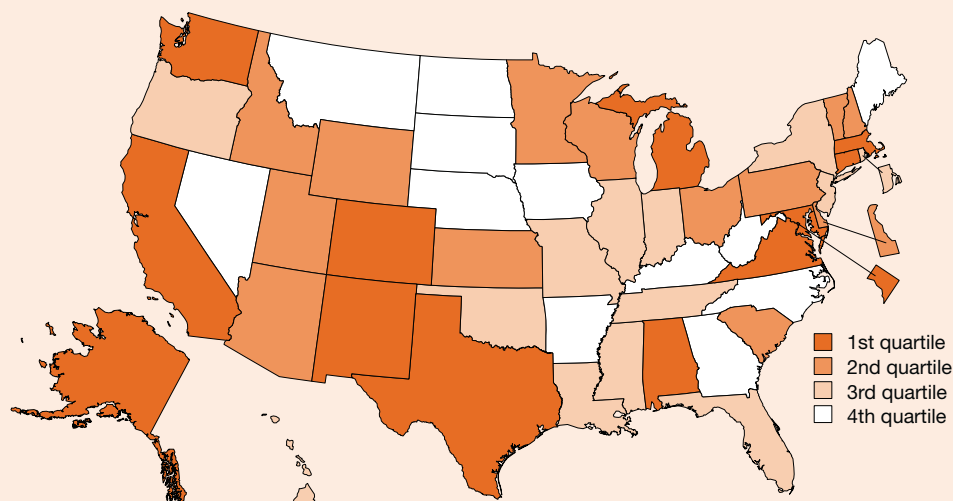
^aCoefficients of variation for estimates of employed S&E doctorate holders presented in appendix table 8-13.

NOTE: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients; and Bureau of Labor Statistics, Local Area Unemployment Statistics.

Engineers as Share of Workforce

Figure 8-30
Engineers as share of workforce: 2008



1st quartile (2.47%–1.20%)	2nd quartile (1.16%–0.99%)	3rd quartile (0.96%–0.75%)	4th quartile (0.74%–0.54%)
Alabama †	Arizona	Florida	Arkansas †
Alaska †	Delaware †	Hawaii †	Georgia
California	Idaho †	Illinois	Iowa
Colorado	Kansas †	Indiana	Kentucky †
Connecticut	Minnesota	Louisiana †	Maine †
District of Columbia	New Hampshire †	Mississippi †	Montana †
Maryland	Ohio	Missouri	Nebraska †
Massachusetts	Pennsylvania	New Jersey	Nevada †
Michigan	South Carolina †	New York	North Carolina
New Mexico †	Utah	Oklahoma †	North Dakota †
Texas	Vermont †	Oregon	South Dakota †
Virginia	Wisconsin	Rhode Island †	West Virginia †
Washington	Wyoming †	Tennessee	

† EPSCoR state

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics. See table 8-30.

Findings

- In the United States, 1.63 million individuals were employed in engineering occupations in 2008, an increase over the 1.48 million engineers employed in 2004. Between 2004 and 2008, the percentage of the workforce employed in engineering occupations remained unchanged at 1.06%.
- The concentration of engineers in individual states ranged from 0.54% to 1.87% in 2008.
- The states with the highest percentage of engineers in their workforces were centers of automobile and aircraft manufacturing.
- States ranking highest on this indicator also ranked high on employment in high-technology establishments as share of total employment.

This indicator shows the representation of trained engineers in a state's workforce. Engineers design and operate production processes and create new products and services. The indicator encompasses the standard occupational codes for engineering fields: aerospace, agricultural, biomedical, chemical, civil, computer hardware, electrical and electronics, environmental, industrial, marine and naval architectural, materials, mechanical, mining and geological, nuclear, and petroleum.

State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work. The survey is conducted as part of a cooperative program between the Bureau of Labor Statistics (BLS) and state employment security agencies. State data on the size of the civilian workforce are BLS estimates based on the Current Population Survey, which assigns workers to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Because OES data do not classify postsecondary teachers by field, in these data, faculty teaching in S&E fields are not counted as working in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-30
Engineers as share of workforce, by state: 2004, 2006, and 2008

State	Engineers			Employed workforce			Engineers in workforce (%)		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
United States.....	1,480,520	1,535,620	1,626,330	139,213,523	144,581,912	153,999,337	1.06	1.06	1.06
Alabama.....	22,170	26,210	26,430	2,014,678	2,120,573	2,162,479	1.10	1.24	1.22
Alaska.....	3,480	3,330	4,450	312,922	323,531	357,136	1.11	1.03	1.25
Arizona.....	36,180	35,630	35,850	2,649,243	2,854,381	3,132,667	1.37	1.25	1.14
Arkansas.....	5,900	7,210	7,340	1,228,163	1,292,886	1,370,259	0.48	0.56	0.54
California.....	220,120	231,480	240,860	16,444,457	17,029,307	18,391,844	1.34	1.36	1.31
Colorado.....	34,370	37,040	41,130	2,384,562	2,537,037	2,730,447	1.44	1.46	1.51
Connecticut.....	26,160	24,070	23,920	1,714,758	1,765,075	1,876,125	1.53	1.36	1.27
Delaware.....	3,810	4,810	5,120	408,022	424,506	442,902	0.93	1.13	1.16
District of Columbia....	10,490	8,920	8,220	285,567	296,957	332,703	3.67	3.00	2.47
Florida.....	59,070	67,810	69,040	8,056,259	8,692,761	9,231,462	0.73	0.78	0.75
Georgia.....	30,550	30,170	36,020	4,257,465	4,522,025	4,847,650	0.72	0.67	0.74
Hawaii.....	4,560	5,380	5,020	597,147	628,277	654,261	0.76	0.86	0.77
Idaho.....	8,250	9,270	7,870	670,746	723,621	754,879	1.23	1.28	1.04
Illinois.....	59,010	57,270	55,840	6,012,320	6,315,715	6,697,335	0.98	0.91	0.83
Indiana.....	30,380	28,380	30,780	3,017,271	3,108,806	3,230,367	1.01	0.91	0.95
Iowa.....	9,900	10,420	10,270	1,542,342	1,602,849	1,675,981	0.64	0.65	0.61
Kansas.....	19,020	17,480	16,930	1,378,713	1,400,169	1,496,943	1.38	1.25	1.13
Kentucky.....	12,870	12,950	13,880	1,859,902	1,922,163	2,042,915	0.69	0.67	0.68
Louisiana.....	15,790	15,250	18,270	1,926,594	1,910,348	2,078,935	0.82	0.80	0.88
Maine.....	4,830	4,230	4,480	661,163	678,843	706,829	0.73	0.62	0.63
Maryland.....	33,190	36,880	39,390	2,766,653	2,892,620	2,997,709	1.20	1.27	1.31
Massachusetts.....	50,370	51,750	54,330	3,204,653	3,234,860	3,424,018	1.57	1.60	1.59
Michigan.....	91,600	99,680	92,190	4,694,981	4,730,291	4,935,584	1.95	2.11	1.87
Minnesota.....	30,370	28,280	29,490	2,781,744	2,822,297	2,932,961	1.09	1.00	1.01
Mississippi.....	8,140	9,830	10,160	1,234,167	1,218,664	1,314,444	0.66	0.81	0.77
Missouri.....	21,070	22,870	25,950	2,821,802	2,885,857	3,012,126	0.75	0.79	0.86
Montana.....	2,580	2,840	3,570	456,624	478,162	506,159	0.57	0.59	0.71
Nebraska.....	5,810	5,820	6,350	940,047	945,270	995,635	0.62	0.62	0.64
Nevada.....	7,190	7,960	7,870	1,134,550	1,240,868	1,373,462	0.63	0.64	0.57
New Hampshire.....	7,890	8,090	7,870	693,648	711,512	738,858	1.14	1.14	1.07
New Jersey.....	37,850	38,130	40,720	4,177,841	4,309,021	4,496,727	0.91	0.88	0.91
New Mexico.....	12,170	10,870	11,500	850,164	895,623	959,458	1.43	1.21	1.20
New York.....	64,920	68,540	74,570	8,810,155	9,072,733	9,679,617	0.74	0.76	0.77
North Carolina.....	31,400	30,040	33,400	4,028,598	4,250,619	4,543,754	0.78	0.71	0.74
North Dakota.....	2,230	2,520	2,530	338,221	346,359	369,671	0.66	0.73	0.68
Ohio.....	62,560	57,810	60,120	5,507,404	5,609,056	5,971,874	1.14	1.03	1.01
Oklahoma.....	12,520	13,840	14,040	1,608,849	1,650,877	1,748,416	0.78	0.84	0.80
Oregon.....	18,500	NA	18,740	1,722,058	1,796,165	1,957,953	1.07	NA	0.96
Pennsylvania.....	NA	61,620	63,340	5,889,957	6,009,858	6,394,884	NA	1.03	0.99
Rhode Island.....	5,270	5,430	5,150	531,121	547,618	567,597	0.99	0.99	0.91
South Carolina.....	21,260	22,460	22,750	1,900,122	1,988,378	2,152,965	1.12	1.13	1.06
South Dakota.....	2,050	2,210	2,440	409,263	417,100	444,890	0.50	0.53	0.55
Tennessee.....	21,100	21,230	23,130	2,733,793	2,835,530	3,041,276	0.77	0.75	0.76
Texas.....	120,810	123,990	146,520	10,456,224	10,921,673	11,701,585	1.16	1.14	1.25
Utah.....	11,560	13,090	14,350	1,169,163	1,272,801	1,383,743	0.99	1.03	1.04
Vermont.....	3,440	3,780	3,790	337,709	348,026	355,432	1.02	1.09	1.07
Virginia.....	47,180	50,780	54,280	3,704,593	3,878,988	4,124,766	1.27	1.31	1.32
Washington.....	45,140	49,840	55,490	3,008,352	3,160,350	3,476,766	1.50	1.58	1.60
West Virginia.....	4,920	5,230	5,320	744,034	767,134	806,152	0.66	0.68	0.66
Wisconsin.....	29,590	30,990	32,010	2,871,034	2,918,155	3,084,130	1.03	1.06	1.04
Wyoming.....	2,290	2,570	3,260	263,705	275,617	292,606	0.87	0.93	1.11
Puerto Rico.....	7,290	8,280	7,990	1,226,251	1,260,703	1,366,307	0.59	0.66	0.58

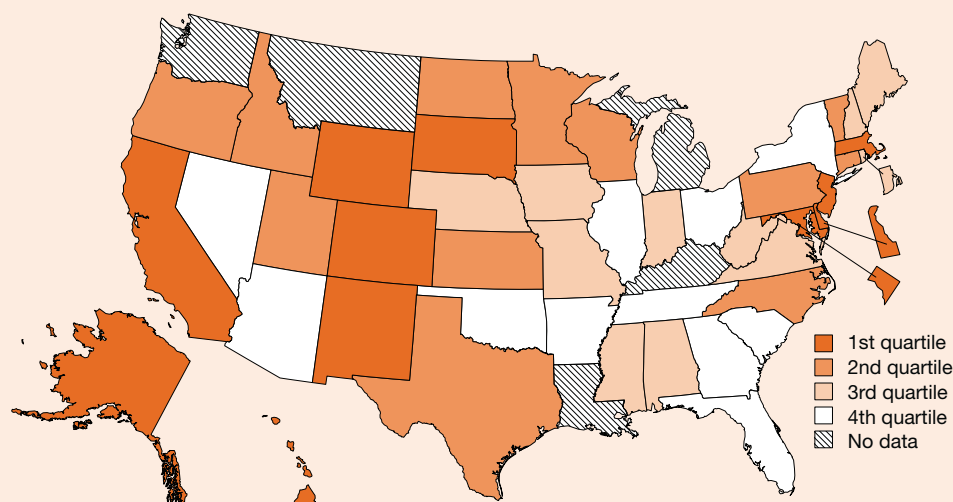
NA = not available

NOTE: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. All 2008 workforce data with the exception of Puerto Rico reflect revised population controls and model reestimation.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics.

Life and Physical Scientists as Share of Workforce

Figure 8-31
Life and physical scientists as share of workforce: 2008



1st quartile (1.70%–0.50%)	2nd quartile (0.48%–0.40%)	3rd quartile (0.39%–0.35%)	4th quartile (0.33%–0.20%)	No data
Alaska †	Connecticut	Alabama †	Arizona	Kentucky †
California	Idaho †	Indiana	Arkansas †	Louisiana †
Colorado	Kansas †	Iowa	Florida	Michigan
Delaware †	Minnesota	Maine †	Georgia	Montana †
District of Columbia	North Carolina	Mississippi †	Illinois	Washington
Hawaii †	North Dakota †	Missouri	Nevada †	
Maryland	Oregon	Nebraska †	New York	
Massachusetts	Pennsylvania	New Hampshire †	Ohio	
New Jersey	Texas	Rhode Island †	Oklahoma †	
New Mexico †	Utah	Virginia	South Carolina †	
South Dakota †	Vermont †	West Virginia †	Tennessee	
Wyoming †	Wisconsin			

† EPSCoR state

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics. See table 8-31.

Findings

- About 621,000 individuals (0.40% of the workforce) were employed as life and physical scientists in the United States in 2008, similar to the 546,160 life and physical scientists employed in 2004, which represented 0.39% of the workforce.
- In 2008, individual states had indicator values ranging from 0.20% to 1.04%, which showed major differences in the concentration of jobs in the life and physical sciences.
- States with the highest concentrations of life and physical scientists in their workforces were uniformly distributed throughout the United States.
- EPSCoR states appeared to be fairly evenly distributed throughout all four quartiles for this indicator.

This indicator shows a state's ability to attract and retain life and physical scientists. Life scientists are identified from standard occupational codes that include agricultural and food scientists, biological scientists, conservation scientists and foresters, and medical scientists. Physical scientists are identified from standard occupational codes that include astronomers, physicists, atmospheric and space scientists, chemists, materials scientists, environmental scientists, and geoscientists. A high share of life and physical scientists in a state's workforce could indicate several scenarios, ranging from a robust cluster of life sciences companies to the presence of forests or national parks, which require foresters, wildlife specialists, and conservationists to manage the natural assets in these areas.

State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work. The survey is conducted as part of a cooperative program between the Bureau of Labor Statistics (BLS) and state employment security agencies. State data on the size of the civilian workforce are BLS estimates based on the Current Population Survey, which assigns workers to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Because OES data do not classify postsecondary teachers by field, in these data, faculty teaching in S&E fields are not counted as working in S&E occupations. Estimates for jurisdictions with smaller populations are generally less precise than estimates for jurisdictions with larger populations.

Table 8-31
Life and physical scientists as share of workforce, by state: 2004, 2006, and 2008

State	Life and physical scientists			Employed workforce			Life and physical scientists in workforce (%)		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
United States.....	546,160	577,890	621,020	139,213,523	144,581,912	153,999,337	0.39	0.40	0.40
Alabama.....	5,630	5,690	7,570	2,014,678	2,120,573	2,162,479	0.28	0.27	0.35
Alaska.....	3,090	3,010	3,720	312,922	323,531	357,136	0.99	0.93	1.04
Arizona.....	6,940	6,460	7,660	2,649,243	2,854,381	3,132,667	0.26	0.23	0.24
Arkansas.....	2,890	2,880	3,180	1,228,163	1,292,886	1,370,259	0.24	0.22	0.23
California.....	68,020	72,590	92,000	16,444,457	17,029,307	18,391,844	0.41	0.43	0.50
Colorado.....	NA	14,130	15,040	2,384,562	2,537,037	2,730,447	NA	0.56	0.55
Connecticut.....	8,460	7,750	7,550	1,714,758	1,765,075	1,876,125	0.49	0.44	0.40
Delaware.....	3,100	2,940	3,420	408,022	424,506	442,902	0.76	0.69	0.77
District of Columbia...	5,860	6,370	5,650	285,567	296,957	332,703	2.05	2.15	1.70
Florida.....	20,490	22,100	22,280	8,056,259	8,692,761	9,231,462	0.25	0.25	0.24
Georgia.....	13,090	9,820	9,610	4,257,465	4,522,025	4,847,650	0.31	0.22	0.20
Hawaii.....	2,400	3,390	3,570	597,147	628,277	654,261	0.40	0.54	0.55
Idaho.....	9,930	3,860	3,100	670,746	723,621	754,879	1.48	0.53	0.41
Illinois.....	19,390	22,650	20,370	6,012,320	6,315,715	6,697,335	0.32	0.36	0.30
Indiana.....	NA	10,350	11,530	3,017,271	3,108,806	3,230,367	NA	0.33	0.36
Iowa.....	NA	5,390	5,900	1,542,342	1,602,849	1,675,981	NA	0.34	0.35
Kansas.....	4,640	NA	6,010	1,378,713	1,400,169	1,496,943	0.34	NA	0.40
Kentucky.....	5,300	4,990	NA	1,859,902	1,922,163	2,042,915	0.28	0.26	NA
Louisiana.....	6,130	6,090	NA	1,926,594	1,910,348	2,078,935	0.32	0.32	NA
Maine.....	2,430	2,650	2,750	661,163	678,843	706,829	0.37	0.39	0.39
Maryland.....	18,150	19,930	22,630	2,766,653	2,892,620	2,997,709	0.66	0.69	0.75
Massachusetts.....	20,700	23,260	26,930	3,204,653	3,234,860	3,424,018	0.65	0.72	0.79
Michigan.....	10,340	12,940	NA	4,694,981	4,730,291	4,935,584	0.22	0.27	NA
Minnesota.....	11,700	13,450	13,990	2,781,744	2,822,297	2,932,961	0.42	0.48	0.48
Mississippi.....	4,540	4,490	4,890	1,234,167	1,218,664	1,314,444	0.37	0.37	0.37
Missouri.....	9,920	10,190	10,620	2,821,802	2,885,857	3,012,126	0.35	0.35	0.35
Montana.....	3,050	3,450	NA	456,624	478,162	506,159	0.67	0.72	NA
Nebraska.....	4,280	4,350	3,580	940,047	945,270	995,635	0.46	0.46	0.36
Nevada.....	3,210	3,460	3,400	1,134,550	1,240,868	1,373,462	0.28	0.28	0.25
New Hampshire.....	1,870	2,250	2,690	693,648	711,512	738,858	0.27	0.32	0.36
New Jersey.....	19,710	NA	25,170	4,177,841	4,309,021	4,496,727	0.47	NA	0.56
New Mexico.....	7,550	5,380	6,870	850,164	895,623	959,458	0.89	0.60	0.72
New York.....	NA	31,280	28,460	8,810,155	9,072,733	9,679,617	NA	0.34	0.29
North Carolina.....	19,190	NA	21,860	4,028,598	4,250,619	4,543,754	0.48	NA	0.48
North Dakota.....	1,570	1,610	1,650	338,221	346,359	369,671	0.46	0.46	0.45
Ohio.....	15,020	17,320	19,040	5,507,404	5,609,056	5,971,874	0.27	0.31	0.32
Oklahoma.....	NA	7,010	5,720	1,608,849	1,650,877	1,748,416	NA	0.42	0.33
Oregon.....	7,990	NA	9,170	1,722,058	1,796,165	1,957,953	0.46	NA	0.47
Pennsylvania.....	25,460	NA	28,610	5,889,957	6,009,858	6,394,884	0.43	NA	0.45
Rhode Island.....	2,790	2,120	2,080	531,121	547,618	567,597	0.53	0.39	0.37
South Carolina.....	5,190	5,680	5,220	1,900,122	1,988,378	2,152,965	0.27	0.29	0.24
South Dakota.....	1,770	1,900	2,350	409,263	417,100	444,890	0.43	0.46	0.53
Tennessee.....	7,380	7,680	7,920	2,733,793	2,835,530	3,041,276	0.27	0.27	0.26
Texas.....	47,540	50,040	46,710	10,456,224	10,921,673	11,701,585	0.45	0.46	0.40
Utah.....	5,820	6,330	6,520	1,169,163	1,272,801	1,383,743	0.50	0.50	0.47
Vermont.....	1,250	1,480	1,460	337,709	348,026	355,432	0.37	0.43	0.41
Virginia.....	NA	15,370	14,810	3,704,593	3,878,988	4,124,766	NA	0.40	0.36
Washington.....	NA	20,590	NA	3,008,352	3,160,350	3,476,766	NA	0.65	NA
West Virginia.....	2,850	3,230	2,890	744,034	767,134	806,152	0.38	0.42	0.36
Wisconsin.....	11,660	13,000	14,580	2,871,034	2,918,155	3,084,130	0.41	0.45	0.47
Wyoming.....	1,840	2,070	2,320	263,705	275,617	292,606	0.70	0.75	0.79
Puerto Rico.....	4,840	5,470	5,380	1,226,251	1,260,703	1,366,307	0.39	0.43	0.39

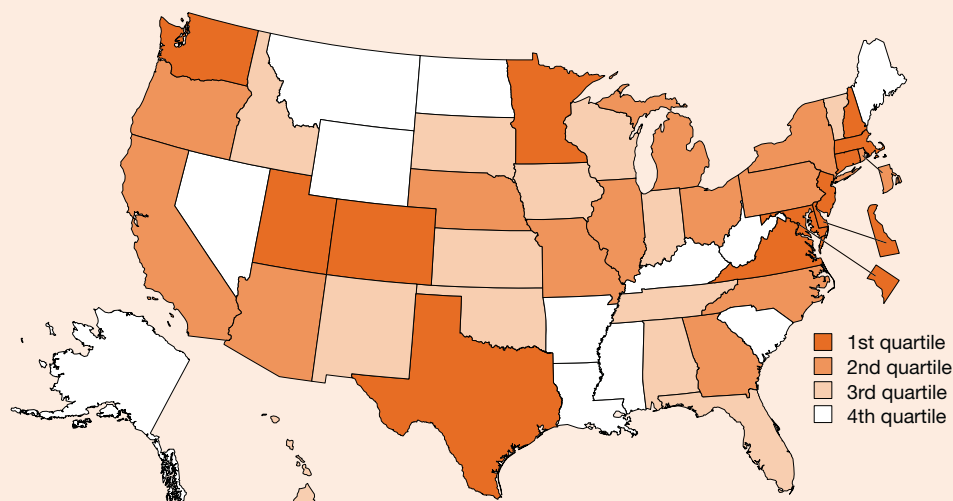
NA = not available

NOTE: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. All 2008 workforce data with the exception of Puerto Rico reflect revised population controls and model reestimation.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics.

Computer Specialists as Share of Workforce

Figure 8-32
Computer specialists as share of workforce: 2008



1st quartile (9.68%–2.10%)	2nd quartile (2.09%–1.74%)	3rd quartile (1.72%–1.20%)	4th quartile (1.19%–0.68%)
Colorado Connecticut Delaware † District of Columbia Maryland Massachusetts Minnesota New Hampshire † New Jersey Texas Utah Virginia Washington	Arizona California Georgia Illinois Michigan Missouri Nebraska † New York North Carolina Ohio Oregon Pennsylvania Rhode Island †	Alabama † Florida Hawaii † Idaho † Indiana Iowa Kansas † New Mexico † Oklahoma † South Dakota † Tennessee Vermont † Wisconsin	Alaska † Arkansas † Kentucky † Louisiana † Maine † Mississippi † Montana † Nevada † North Dakota † South Carolina † West Virginia † Wyoming †

† EPSCoR state

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics. See table 8-32.

Findings

- In the United States, 3.20 million individuals (2.08% of the workforce) were employed as computer specialists in 2008, similar to the 2.81 million computer specialists employed in 2004, which accounted for 2.02% of the workforce.
- Individual states showed large differences in the intensity of computer-related operations in their economies, with 0.68% to 4.16% of their workforce employed in computer-related occupations in 2008.
- There was a significant concentration of computer-intensive occupations in the District of Columbia and the adjacent states of Maryland and Virginia. This may be due to the presence of many government offices, colleges and universities, and government contractors in the area that employ scientists and engineers, especially computer scientists.
- EPSCoR states tended to have smaller percentages of computer specialists in their workforces, suggesting that their economies are less technically oriented in this respect.

This indicator shows the extent to which a state's workforce makes use of specialists with advanced computer training. Computer specialists are identified from 10 standard occupational codes that include computer and information scientists, programmers, software engineers, support specialists, systems analysts, database administrators, and network and computer system administrators. Higher values may indicate a state workforce that is better able to thrive in an information economy or to embrace and utilize computer technology.

State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work. The survey is conducted as part of a cooperative program between the Bureau of Labor Statistics (BLS) and state employment security agencies. State data on the size of the civilian workforce are BLS estimates based on the Current Population Survey, which assigns workers to a state based on where they live.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Because OES data do not classify postsecondary teachers by field, in these data, faculty teaching in S&E fields are not counted as working in S&E occupations. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-32
Computer specialists as share of workforce, by state: 2004, 2006, and 2008

State	Computer specialists			Employed workforce			Computer specialists in workforce (%)		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
EPSCoR states.....	276,210	310,990	317,290	22,500,274	23,256,125	24,693,283	1.23	1.34	1.28
Non-EPSCoR states.....	2,476,430	2,613,670	2,713,430	116,427,682	121,028,830	128,973,351	2.13	2.16	2.10
Average EPSCoR state value	na	na	na	na	na	na	1.25	1.39	1.32
Average non-EPSCoR state value	na	na	na	na	na	na	2.17	2.21	2.15
United States.....	2,806,910	2,960,460	3,198,050	139,213,523	144,581,912	153,999,337	2.02	2.05	2.08
Alabama.....	28,320	32,720	33,010	2,014,678	2,120,573	2,162,479	1.41	1.54	1.53
Alaska.....	3,320	3,810	3,720	312,922	323,531	357,136	1.06	1.18	1.04
Arizona.....	45,930	49,180	54,520	2,649,243	2,854,381	3,132,667	1.73	1.72	1.74
Arkansas.....	12,470 ^a	13,360	15,500	1,228,163	1,292,886	1,370,259	1.02	1.03	1.13
California.....	370,180	380,040	383,900	16,444,457	17,029,307	18,391,844	2.25	2.23	2.09
Colorado.....	74,940	76,200	79,930	2,384,562	2,537,037	2,730,447	3.14	3.00	2.93
Connecticut.....	44,120	44,160	40,900	1,714,758	1,765,075	1,876,125	2.57	2.50	2.18
Delaware.....	8,730 ^a	11,930	11,950 ^a	408,022	424,506	442,902	2.14	2.81	2.70
District of Columbia.....	28,040	31,810	32,210	285,567	296,957	332,703	9.82	10.71	9.68
Florida.....	137,740	143,450	141,320	8,056,259	8,692,761	9,231,462	1.71	1.65	1.53
Georgia.....	94,080	89,390	86,210	4,257,465	4,522,025	4,847,650	2.21	1.98	1.78
Hawaii.....	7,440	8,140	7,840	597,147	628,277	654,261	1.25	1.30	1.20
Idaho.....	8,710	10,180	9,410 ^a	670,746	723,621	754,879	1.30	1.41	1.25
Illinois.....	114,860 ^a	129,880	137,420	6,012,320	6,315,715	6,697,335	1.91	2.06	2.05
Indiana.....	37,540	37,230	39,850	3,017,271	3,108,806	3,230,367	1.24	1.20	1.23
Iowa.....	22,650	24,940	26,400	1,542,342	1,602,849	1,675,981	1.47	1.56	1.58
Kansas.....	20,850	24,110	25,750	1,378,713	1,400,169	1,496,943	1.51	1.72	1.72
Kentucky.....	23,800	23,510	24,250	1,859,902	1,922,163	2,042,915	1.28	1.22	1.19
Louisiana.....	18,500	17,090	16,020	1,926,594	1,910,348	2,078,935	0.96	0.89	0.77
Maine.....	6,860	7,640	7,660	661,163	678,843	706,829	1.04	1.13	1.08
Maryland.....	92,450	91,040	89,900	2,766,653	2,892,620	2,997,709	3.34	3.15	3.00
Massachusetts.....	103,280	109,430	111,910	3,204,653	3,234,860	3,424,018	3.22	3.38	3.27
Michigan.....	74,600 ^a	89,280	88,980	4,694,981	4,730,291	4,935,584	1.59	1.89	1.80
Minnesota.....	67,600	71,930	75,230	2,781,744	2,822,297	2,932,961	2.43	2.55	2.56
Mississippi.....	8,770	8,510	9,290	1,234,167	1,218,664	1,314,444	0.71	0.70	0.71
Missouri.....	56,460	61,120	61,000 ^a	2,821,802	2,885,857	3,012,126	2.00	2.12	2.03
Montana.....	4,500 ^a	5,790	5,170 ^a	456,624	478,162	506,159	0.99	1.21	1.02
Nebraska.....	15,890 ^a	20,030	20,410	940,047	945,270	995,635	1.69	2.12	2.05
Nevada.....	11,540	12,940	12,880	1,134,550	1,240,868	1,373,462	1.02	1.04	0.94
New Hampshire.....	13,180	16,390	16,780	693,648	711,512	738,858	1.90	2.30	2.27
New Jersey.....	114,370	116,290	121,690	4,177,841	4,309,021	4,496,727	2.74	2.70	2.71
New Mexico.....	9,720 ^a	11,060	11,490	850,164	895,623	959,458	1.14	1.23	1.20
New York.....	170,140	188,620	200,900 ^a	8,810,155	9,072,733	9,679,617	1.93	2.08	2.08
North Carolina.....	77,240	80,150	81,630	4,028,598	4,250,619	4,543,754	1.92	1.89	1.80
North Dakota.....	4,250	4,650	3,140 ^a	338,221	346,359	369,671	1.26	1.34	0.85
Ohio.....	93,300	99,960	111,160	5,507,404	5,609,056	5,971,874	1.69	1.78	1.86
Oklahoma.....	21,600 ^a	26,200	27,600	1,608,849	1,650,877	1,748,416	1.34	1.59	1.58
Oregon.....	29,120	33,960	34,980	1,722,058	1,796,165	1,957,953	1.69	1.89	1.79
Pennsylvania.....	102,590	110,090	115,300	5,889,957	6,009,858	6,394,884	1.74	1.83	1.80
Rhode Island.....	7,150 ^a	9,490	9,940 ^a	531,121	547,618	567,597	1.35	1.73	1.75
South Carolina.....	20,730	23,070	25,130	1,900,122	1,988,378	2,152,965	1.09	1.16	1.17
South Dakota.....	5,090	5,160	5,860	409,263	417,100	444,890	1.24	1.24	1.32
Tennessee.....	36,870	36,570	38,490	2,733,793	2,835,530	3,041,276	1.35	1.29	1.27
Texas.....	209,360	224,330	245,730	10,456,224	10,921,673	11,701,585	2.00	2.05	2.10
Utah.....	25,340	30,060	30,750	1,169,163	1,272,801	1,383,743	2.17	2.36	2.22
Vermont.....	5,810	5,920	5,610	337,709	348,026	355,432	1.72	1.70	1.58
Virginia.....	151,810	169,830	171,440	3,704,593	3,878,988	4,124,766	4.10	4.38	4.16
Washington.....	83,480	80,140	101,030	3,008,352	3,160,350	3,476,766	2.77	2.54	2.91
West Virginia.....	7,230	7,250	6,900	744,034	767,134	806,152	0.97	0.95	0.86
Wisconsin.....	46,380	46,400	42,860	2,871,034	2,918,155	3,084,130	1.62	1.59	1.39
Wyoming.....	1,750	2,040	1,980	263,705	275,617	292,606	0.66	0.74	0.68
Puerto Rico.....	7,380	9,050	8,750	1,226,251	1,260,703	1,366,307	0.60	0.72	0.64

na = not applicable

EPSCoR = Experimental Program to Stimulate Competitive Research

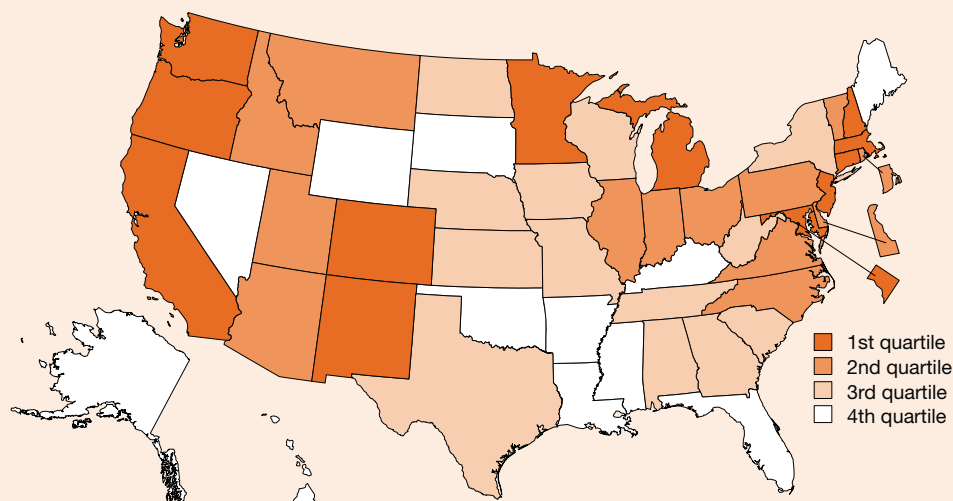
^aValue may be underreported because one or more codes for computer occupations suppressed by state or Bureau of Labor Statistics and not reported at state level.

NOTES: Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. All 2008 workforce data with the exception of Puerto Rico reflect revised population controls and model reestimation. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics.

R&D as Share of Gross Domestic Product

Figure 8-33
R&D as share of gross domestic product: 2007



1st quartile (7.53%–2.74%)	2nd quartile (2.61%–2.04%)	3rd quartile (2.00%–1.12%)	4th quartile (1.01%–0.41%)
California	Arizona	Alabama †	Alaska †
Colorado	Delaware †	Georgia	Arkansas †
Connecticut	Idaho †	Iowa	Florida
District of Columbia	Illinois	Kansas †	Hawaii †
Maryland	Indiana	Missouri	Kentucky †
Massachusetts	Montana †	Nebraska †	Louisiana †
Michigan	North Carolina	New York	Maine †
Minnesota	Ohio	North Dakota †	Mississippi †
New Hampshire †	Pennsylvania	South Carolina †	Nevada †
New Jersey	Rhode Island †	Tennessee	Oklahoma †
New Mexico †	Utah	Texas	South Dakota †
Oregon	Vermont †	West Virginia †	Wyoming †
Washington	Virginia	Wisconsin	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, National Patterns of R&D Resources; and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-33.

Findings

- The national value of R&D expenditures as a share of GDP rose slightly between 1998 and 2007, from 2.47% to 2.62%.
- In 2007, state values for this indicator ranged from 0.41% to 7.53%, indicating large differences in the geographic concentration of R&D activity.
- New Mexico, which has large federal R&D activities and a relatively small GDP, is an outlier on this indicator.
- States with high rankings on this indicator also tended to rank high on S&E doctorate holders as a share of the workforce.
- The total R&D performed in states in the EPSCoR group was approximately one-tenth of that performed in states in the non-EPSCoR group. EPSCoR state values on this indicator were more concentrated toward the low end of the distribution than comparable values for the ratio of academic R&D to state GDP.

This indicator shows the extent to which R&D plays a role in a state's economy. A high value indicates that a state has a high intensity of R&D activity, which may support future growth in knowledge-based industries. Industries that have a high percentage of R&D activity include pharmaceuticals, chemicals, computer equipment and services, electronic components, aerospace, and motor vehicles. R&D refers to R&D activities performed by federal and state agencies, businesses, universities, and nonprofit organizations. In 2007, business performed 72.0% of total R&D at the national level followed by colleges and universities at 13.3%; government facilities, including federally funded R&D centers, at 10.5%; and nonprofit institutions at 4.2%. Data for the value of gross domestic product (GDP) and for R&D expenditures are shown in current dollars.

The methodology for assigning industry R&D activity at the state level was modified in 2001, and 1998–2000 data were recalculated using the new methodology. State-level R&D data from years before 1998 are not comparable.

Table 8-33

R&D as share of gross domestic product, by state: 1998, 2002, and 2007

State	R&D performed (\$millions)			State GDP (\$millions)			R&D performed/GDP (%)		
	1998	2002	2007	1998	2002	2007	1998	2002	2007
EPSCoR states.....	18,832	24,247	29,581	1,231,448	1,451,648	1,981,871	1.53	1.67	1.49
Non-EPSCoR states.....	193,314	228,752	326,296	7,396,530	8,879,038	11,641,354	2.61	2.58	2.80
Average EPSCoR state value.....	na	na	na	na	na	na	1.79	1.83	1.64
Average non-EPSCoR state value.....	na	na	na	na	na	na	2.49	2.53	2.84
United States.....	214,752	255,705	359,739	8,679,660	10,398,403	13,715,741	2.47	2.46	2.62
Alabama.....	1,926	2,323	3,289	106,656	123,805	164,524	1.81	1.88	2.00
Alaska.....	NA	308	311	23,165	29,186	44,887	NA	1.06	0.69
Arizona.....	2,318	4,096	5,006	137,581	171,942	245,952	1.68	2.38	2.04
Arkansas.....	283	427	632	61,861	72,203	95,116	0.46	0.59	0.66
California.....	43,919	51,388	77,608	1,085,884	1,340,446	1,801,762	4.04	3.83	4.31
Colorado.....	4,565	4,218	6,828	143,160	182,154	235,848	3.19	2.32	2.90
Connecticut.....	3,559	6,774	10,228	145,373	166,073	212,252	2.45	4.08	4.82
Delaware.....	2,556	1,319	1,607	36,831	45,324	61,545	6.94	2.91	2.61
District of Columbia.....	2,606	2,706	3,862	51,682	67,717	92,516	5.04	4.00	4.17
Florida.....	4,773	5,498	7,158	417,169	522,719	741,861	1.14	1.05	0.96
Georgia.....	2,492	3,935	4,425	255,612	306,680	391,241	0.97	1.28	1.13
Hawaii.....	242	456	592	37,549	43,476	62,019	0.64	1.05	0.95
Idaho.....	1,127	1,370	1,115	29,800	36,651	52,110	3.78	3.74	2.14
Illinois.....	8,830	10,190	14,287	423,855	487,129	617,409	2.08	2.09	2.31
Indiana.....	3,089	4,326	5,980	178,909	205,015	249,229	1.73	2.11	2.40
Iowa.....	1,054	1,346	1,882	83,665	97,356	129,911	1.26	1.38	1.45
Kansas.....	1,518	1,865	1,697	76,005	89,573	116,986	2.00	2.08	1.45
Kentucky.....	645	1,128	1,406	108,813	120,726	152,099	0.59	0.93	0.92
Louisiana.....	542	858	1,073	118,085	134,308	207,407	0.46	0.64	0.52
Maine.....	159	429	485	31,731	38,625	48,021	0.50	1.11	1.01
Maryland.....	8,019	9,030	14,130	161,954	204,120	264,426	4.95	4.42	5.34
Massachusetts.....	13,382	14,316	24,557	236,079	284,386	352,178	5.67	5.03	6.97
Michigan.....	13,655	15,082	17,402	309,431	349,837	379,934	4.41	4.31	4.58
Minnesota.....	3,818	5,247	7,533	164,897	198,558	252,472	2.32	2.64	2.98
Mississippi.....	366	691	838	60,513	68,144	87,652	0.61	1.01	0.96
Missouri.....	1,868	2,478	3,754	164,267	188,351	229,027	1.14	1.32	1.64
Montana.....	191	236	859	19,884	23,560	34,266	0.96	1.00	2.51
Nebraska.....	315	663	900	52,076	59,934	80,360	0.60	1.11	1.12
Nevada.....	571	524	794	63,635	81,274	129,314	0.90	0.64	0.61
New Hampshire.....	1,340	1,435	2,146	39,102	46,188	57,820	3.43	3.11	3.71
New Jersey.....	11,368	13,020	19,552	314,117	372,754	461,295	3.62	3.49	4.24
New Mexico.....	3,032	4,689	5,663	45,918	52,510	75,192	6.60	8.93	7.53
New York.....	13,731	13,354	15,939	686,906	821,577	1,105,020	2.00	1.63	1.44
North Carolina.....	4,560	5,135	9,204	242,904	296,435	390,467	1.88	1.73	2.36
North Dakota.....	119	295	327	16,936	19,880	28,518	0.71	1.48	1.15
Ohio.....	6,970	8,310	10,041	348,723	389,773	462,506	2.00	2.13	2.17
Oklahoma.....	513	793	921	79,341	97,170	136,374	0.65	0.82	0.68
Oregon.....	1,910	2,892	4,333	100,951	117,131	158,268	1.89	2.47	2.74
Pennsylvania.....	8,762	9,763	13,510	361,800	423,110	533,212	2.42	2.31	2.53
Rhode Island.....	1,677	1,639	1,081	29,537	36,909	46,699	5.68	4.44	2.32
South Carolina.....	989	1,668	2,291	102,945	121,582	151,703	0.96	1.37	1.51
South Dakota.....	60	111	240	20,771	26,416	35,211	0.29	0.42	0.68
Tennessee.....	2,503	2,568	3,659	160,872	191,525	245,162	1.56	1.34	1.49
Texas.....	10,774	14,223	17,853	629,209	783,480	1,148,531	1.71	1.82	1.55
Utah.....	1,495	1,572	2,337	60,168	72,665	105,574	2.48	2.16	2.21
Vermont.....	175	398	534	15,935	19,553	24,627	1.10	2.04	2.17
Virginia.....	4,934	5,895	9,473	226,569	285,759	384,132	2.18	2.06	2.47
Washington.....	8,466	10,511	15,061	195,794	231,463	310,279	4.32	4.54	4.85
West Virginia.....	421	542	650	39,500	45,032	57,877	1.07	1.20	1.12
Wisconsin.....	2,501	3,585	4,555	160,681	188,600	233,406	1.56	1.90	1.95
Wyoming.....	65	80	129	14,859	19,619	31,544	0.44	0.41	0.41
Puerto Rico.....	NA	NA	NA	54,086	71,624	NA	NA	NA	NA

na = not applicable; NA = not available

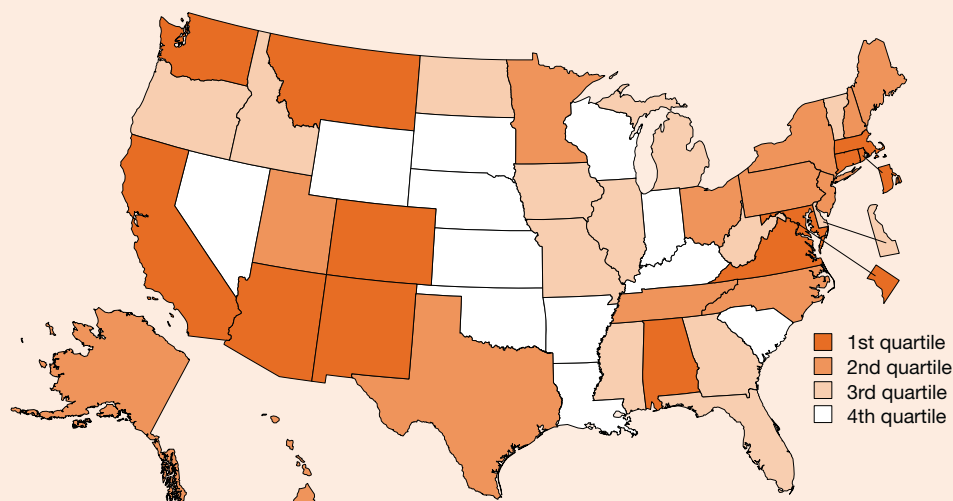
EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product

NOTES: R&D includes R&D performed by federal agencies, business, universities, other nonprofit organizations, and state agencies. R&D and GDP reported in current dollars. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Science Foundation, Division of Science Resources Statistics, National Patterns of R&D Resources (various years); Bureau of Economic Analysis, Gross Domestic Product data; and Government of Puerto Rico, Office of the Governor.

Federal R&D Obligations per Civilian Worker

Figure 8-34
Federal R&D obligations per civilian worker: 2007



1st quartile (\$13,453–\$805)	2nd quartile (\$756–\$424)	3rd quartile (\$397–\$276)	4th quartile (\$235–\$115)
Alabama †	Alaska †	Delaware †	Arkansas †
Arizona	Hawaii †	Florida	Indiana
California	Maine †	Georgia	Kansas †
Colorado	Minnesota	Idaho †	Kentucky †
Connecticut	New Hampshire †	Illinois	Louisiana †
District of Columbia	New Jersey	Iowa	Nebraska †
Maryland	New York	Michigan	Nevada †
Massachusetts	North Carolina	Mississippi †	Oklahoma †
Montana †	Ohio	Missouri	South Carolina †
New Mexico †	Pennsylvania	North Dakota †	South Dakota †
Rhode Island †	Tennessee	Oregon	Wisconsin
Virginia	Texas	Vermont †	Wyoming †
Washington	Utah	West Virginia †	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Federal Funds for Research and Development; and Bureau of Labor Statistics, Local Area Unemployment Statistics. See table 8-34.

Findings

- Federal R&D obligations have increased appreciably from about \$68 billion in 1997 to about \$111 billion in 2007, an increase of 63% in current dollars.
- In 2007, federal R&D obligations per civilian worker were concentrated in a few states; only 12 states and the District of Columbia exceeded the national average of \$764 per worker.
- Federal R&D obligations in 2007 varied greatly among the states, ranging from \$4,029 to \$115 per civilian worker. Higher values were found in the states surrounding the District of Columbia and in sparsely populated states with national laboratories or federal facilities.
- EPSCoR states tended to be concentrated in the lower two quartiles of this indicator, showing that many EPSCoR states receive smaller amounts of federal R&D funding than would have been anticipated based on the size of their civilian workforce.

This indicator shows how federal R&D funding is disbursed geographically relative to the size of a state's civilian workforce. Federal R&D dollars are attributed to the states in which the recipients are located.

Federal obligations for R&D come from the National Science Foundation Survey of Federal Funds for Research and Development and include data reported by 11 federal agencies. The Department of Defense (DOD) disburses most—approximately 50%—federal R&D funding. The geographic distribution of DOD development funding to industry reflects the location of prime contractors only, not the subcontractors who perform much of the R&D. A high value may indicate the existence of a number of large prime contractors or major federally funded R&D facilities in a state.

The size of a state's civilian workforce is a nonseasonally adjusted annual estimate of employed workers based on the Bureau of Labor Statistics Current Population Survey, which assigns workers to a location based on residence. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-34

Federal R&D obligations per civilian worker, by state: 1997, 2002, and 2007

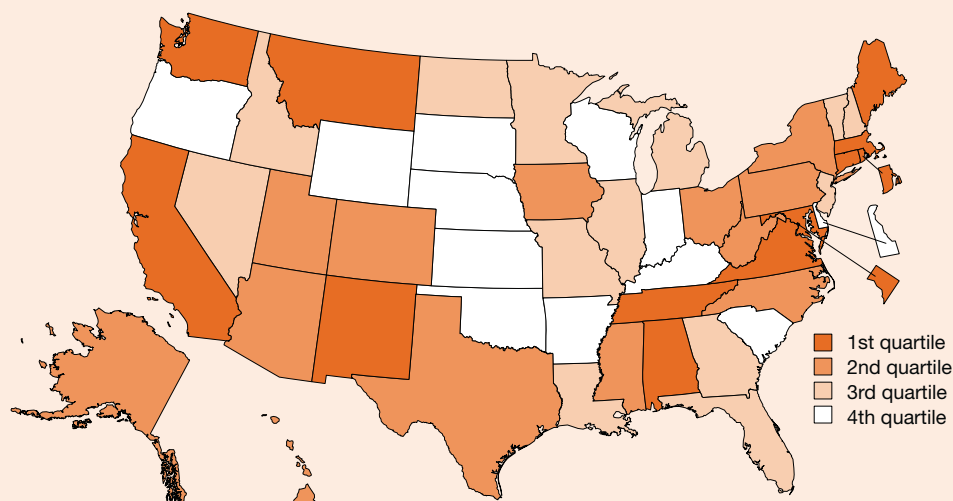
State	Federal R&D obligations (current \$thousands)			Civilian workers			Federal R&D obligations/ civilian worker (\$)		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
United States.....	68,364,994	83,629,201	111,210,200	130,988,267	136,781,272	145,595,173	522	611	764
Alabama.....	2,213,683	2,704,834	2,203,409	2,035,156	1,994,748	2,105,951	1,088	1,356	1,046
Alaska.....	99,928	273,779	249,799	289,963	305,112	330,587	345	897	756
Arizona.....	732,065	2,057,261	2,345,659	2,196,901	2,512,714	2,913,695	333	819	805
Arkansas.....	95,709	141,267	166,582	1,177,143	1,204,467	1,293,852	81	117	129
California.....	13,731,238	15,686,055	21,313,080	14,780,791	16,180,799	17,208,903	929	969	1,238
Colorado.....	1,340,231	1,608,971	2,625,822	2,154,294	2,304,109	2,602,015	622	698	1,009
Connecticut.....	846,458	1,916,926	1,987,490	1,674,937	1,700,949	1,780,473	505	1,127	1,116
Delaware.....	48,964	78,846	127,615	378,117	401,301	427,766	129	196	298
District of Columbia...	2,232,284	2,849,531	4,130,639	262,789	284,615	307,049	8,495	10,012	13,453
Florida.....	3,326,418	2,300,550	2,715,997	7,040,660	7,662,511	8,779,299	472	300	309
Georgia.....	3,919,868	2,019,248	1,326,052	3,751,699	4,135,381	4,602,947	1,045	488	288
Hawaii.....	150,722	375,159	343,581	566,766	584,354	631,911	266	642	544
Idaho.....	205,660	230,910	281,334	598,004	646,142	733,652	344	357	383
Illinois.....	1,140,163	1,693,942	2,115,154	5,988,296	5,969,393	6,361,750	190	284	332
Indiana.....	410,646	525,745	572,444	3,014,499	3,002,515	3,065,590	136	175	187
Iowa.....	228,180	404,545	602,947	1,555,837	1,567,836	1,598,261	147	258	377
Kansas.....	255,490	290,516	246,693	1,329,797	1,350,960	1,418,666	192	215	174
Kentucky.....	91,291	321,284	221,222	1,809,785	1,838,495	1,932,028	50	175	115
Louisiana.....	211,036	431,989	418,396	1,890,102	1,892,636	1,921,343	112	228	218
Maine.....	68,683	254,518	377,059	624,410	650,943	671,337	110	391	562
Maryland.....	7,328,937	7,192,243	11,578,771	2,646,200	2,733,103	2,873,512	2,770	2,632	4,029
Massachusetts.....	3,437,962	4,658,616	6,741,246	3,158,851	3,243,409	3,255,611	1,088	1,436	2,071
Michigan.....	735,221	1,244,244	1,709,933	4,748,691	4,724,998	4,659,927	155	263	367
Minnesota.....	609,395	1,150,839	1,383,666	2,605,673	2,749,525	2,796,737	234	419	495
Mississippi.....	289,791	622,714	423,671	1,200,845	1,214,631	1,231,743	241	513	344
Missouri.....	1,130,148	1,202,671	1,142,325	2,780,185	2,829,985	2,878,399	407	425	397
Montana.....	79,347	112,924	652,591	427,504	445,281	485,615	186	254	1,344
Nebraska.....	82,981	144,671	187,239	904,492	921,201	953,769	92	157	196
Nevada.....	295,042	335,989	298,924	895,258	1,066,477	1,271,472	330	315	235
New Hampshire.....	278,697	296,575	317,036	635,469	679,818	712,048	439	436	445
New Jersey.....	1,318,793	2,021,450	2,141,156	4,031,022	4,117,265	4,276,561	327	491	501
New Mexico.....	1,933,123	2,746,139	3,201,259	768,596	823,191	909,968	2,515	3,336	3,518
New York.....	2,471,213	3,746,837	5,061,983	8,416,544	8,721,428	9,087,278	294	430	557
North Carolina.....	900,947	1,390,440	1,824,802	3,809,601	3,930,736	4,308,624	236	354	424
North Dakota.....	53,015	102,136	113,203	335,854	333,605	354,003	158	306	320
Ohio.....	1,879,784	2,103,409	2,602,628	5,448,161	5,503,109	5,640,081	345	382	461
Oklahoma.....	160,356	271,565	225,577	1,543,105	1,602,118	1,657,964	104	170	136
Oregon.....	319,587	502,284	504,150	1,652,997	1,704,131	1,827,285	193	295	276
Pennsylvania.....	1,893,867	3,162,026	3,277,761	5,775,178	5,869,224	6,013,406	328	539	545
Rhode Island.....	403,844	501,299	627,538	504,147	525,721	547,927	801	954	1,145
South Carolina.....	166,607	371,006	417,465	1,819,508	1,840,598	2,011,255	92	202	208
South Dakota.....	41,955	58,679	61,925	383,216	402,397	429,495	109	146	144
Tennessee.....	566,242	961,149	1,658,662	2,640,005	2,714,992	2,893,748	214	354	573
Texas.....	3,640,162	3,374,405	5,426,669	9,395,279	10,115,299	10,992,828	387	334	494
Utah.....	319,826	408,747	765,138	1,034,429	1,113,645	1,325,480	309	367	577
Vermont.....	49,885	136,374	107,999	315,806	331,763	340,073	158	411	318
Virginia.....	4,849,753	5,756,339	8,753,773	3,323,266	3,588,079	3,930,984	1,459	1,604	2,227
Washington.....	1,226,154	1,998,915	4,708,365	2,822,223	2,877,022	3,253,475	434	695	1,447
West Virginia.....	193,061	254,239	216,621	746,442	749,164	771,837	259	339	281
Wisconsin.....	332,214	594,816	670,963	2,855,830	2,860,915	2,937,903	116	208	228
Wyoming.....	28,368	39,585	36,187	243,944	258,462	279,090	116	153	130
Puerto Rico.....	58,943	135,294	85,850	1,132,658	1,169,760	1,241,426	52	116	69

NOTES: Only 11 agencies required to report federal R&D obligations: Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security (established in 2002), Interior, and Transportation; Environmental Protection Agency; National Aeronautics and Space Administration; and National Science Foundation. These obligations represent approximately 98% of total federal R&D obligations. Civilian workers represent employed component of civilian labor force and reported as annual data not seasonally adjusted.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Federal Funds for Research and Development (various years); and Bureau of Labor Statistics, Local Area Unemployment Statistics.

Federal R&D Obligations per Individual in S&E Occupation

Figure 8-35
Federal R&D obligations per individual in S&E occupation: 2007



1st quartile (\$95,724–\$23,426)	2nd quartile (\$22,915–\$12,295)	3rd quartile (\$11,698–\$8,065)	4th quartile (\$7,705–\$4,394)
Alabama †	Alaska †	Florida	Arkansas †
California	Arizona	Georgia	Delaware †
Connecticut	Colorado	Idaho †	Indiana
District of Columbia	Hawaii †	Illinois	Kansas †
Maine †	Iowa	Louisiana †	Kentucky †
Maryland	Mississippi †	Michigan	Nebraska †
Massachusetts	New York	Minnesota	Oklahoma †
Montana †	North Carolina	Missouri	Oregon
New Mexico †	Ohio	Nevada †	South Carolina †
Rhode Island †	Pennsylvania	New Hampshire †	South Dakota †
Tennessee	Texas	New Jersey	Wisconsin
Virginia	Utah	North Dakota †	Wyoming †
Washington	West Virginia †	Vermont †	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Federal Funds for Research and Development; and Bureau of Labor Statistics, Occupational Employment and Wage Estimates. See table 8-35.

Findings

- The federal government obligated approximately \$111 billion for R&D in 2007—about \$20,000 for each person employed in an S&E occupation.
- The state distribution of federal R&D obligations per person employed in an S&E occupation ranged from \$95,724 to \$4,394 in 2007.
- The distribution for this indicator was highly skewed in 2007, with only 14 states and the District of Columbia above the national average. High values were reported in the District of Columbia and adjoining states and also in states where federal facilities or major defense contractors are located.
- EPSCoR states tended to rank in the lower two quartiles for this indicator, showing that many EPSCoR states receive smaller amounts of federal R&D funding than would have been anticipated based on the number of S&E workers in the state.

This indicator describes the relationship between federal R&D spending in a state and the number of employees in the state who work in S&E occupations. Federal R&D dollars are attributed to the states in which the recipients of federal obligations are located.

Federal obligations for R&D come from the National Science Foundation's Survey of Federal Funds for Research and Development and include data reported by 11 federal agencies. The Department of Defense (DOD) disburses most—approximately 50%—federal R&D funding. The geographic distribution of DOD development funding to industry reflects the location of prime contractors only, not the numerous subcontractors who perform much of the R&D.

S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. They exclude managers, technicians, elementary and secondary schoolteachers, and medical personnel. State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work. Because OES data do not classify postsecondary teachers by field, in these data, faculty teaching in S&E fields are not counted as working in S&E occupations.

Data on people in S&E occupations are sample based. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-35

Federal R&D obligations per individual in S&E occupation, by state: 2003, 2005, and 2007

State	Federal R&D obligations (current \$millions)			Individuals in S&E occupations			Federal R&D obligations/individual in S&E occupation (\$)		
	2003	2005	2007	2003	2005	2007	2003	2005	2007
United States.....	91,247	106,743	111,212	4,961,540	5,233,520	5,591,990	18,391	20,396	19,888
Alabama.....	2,933	2,800	2,203	56,380	62,790	69,650	52,020	44,596	31,630
Alaska.....	246	234	250	10,600	11,230	11,990	23,210	20,796	20,851
Arizona.....	1,857	2,674	2,346	92,120	96,410	102,380	20,156	27,741	22,915
Arkansas.....	140	154	167	21,340	24,660	28,460	6,547	6,255	5,868
California.....	17,410	19,380	21,313	676,180	716,530	753,570	25,748	27,046	28,283
Colorado.....	1,612	2,037	2,626	124,140	126,110	138,990	12,985	16,150	18,893
Connecticut.....	2,068	2,154	1,987	81,380	83,930	80,280	25,411	25,658	24,751
Delaware.....	91	94	128	17,370	18,010	22,140	5,261	5,228	5,781
District of Columbia...	2,916	3,993	4,131	54,890	63,410	63,150	53,127	62,978	65,416
Florida.....	2,522	2,198	2,716	221,070	241,000	244,140	11,408	9,120	11,125
Georgia.....	1,514	1,707	1,326	144,170	137,580	136,880	10,503	12,411	9,687
Hawaii.....	350	384	344	16,090	17,460	18,740	21,731	22,016	18,356
Idaho.....	216	273	281	22,150	23,880	24,330	9,757	11,436	11,550
Illinois.....	1,900	1,983	2,115	211,230	221,630	225,180	8,996	8,946	9,392
Indiana.....	561	554	572	78,410	79,910	83,080	7,158	6,928	6,885
Iowa.....	465	448	603	37,320	40,300	45,430	12,466	11,108	13,273
Kansas.....	190	198	247	51,970	51,630	50,040	3,656	3,835	4,936
Kentucky.....	232	263	221	45,230	44,530	49,030	5,131	5,901	4,507
Louisiana.....	442	402	418	41,900	41,030	38,450	10,547	9,799	10,871
Maine.....	145	240	377	15,020	15,500	15,960	9,650	15,473	23,622
Maryland.....	7,804	12,211	11,579	149,250	160,120	162,540	52,291	76,264	71,238
Massachusetts.....	5,157	5,702	6,741	184,690	193,180	205,610	27,920	29,516	32,785
Michigan.....	1,673	1,105	1,710	182,940	192,150	212,040	9,146	5,752	8,065
Minnesota.....	861	758	1,384	117,120	120,930	129,840	7,354	6,270	10,659
Mississippi.....	1,174	424	424	22,190	23,480	25,520	52,900	18,062	16,614
Missouri.....	1,270	4,040	1,142	84,150	92,260	102,170	15,091	43,793	11,177
Montana.....	130	177	653	11,450	11,940	13,240	11,314	14,811	49,320
Nebraska.....	146	145	187	30,710	31,530	31,420	4,765	4,603	5,952
Nevada.....	409	382	299	22,330	24,400	26,920	18,330	15,675	11,107
New Hampshire.....	363	364	317	23,430	26,840	28,450	15,498	13,574	11,142
New Jersey.....	1,786	2,344	2,141	161,420	174,270	186,120	11,063	13,451	11,503
New Mexico.....	2,850	3,279	3,201	33,600	32,530	33,440	84,823	100,808	95,724
New York.....	3,973	4,956	5,062	272,440	289,010	322,520	14,583	17,147	15,695
North Carolina.....	1,611	1,791	1,825	132,440	134,290	142,970	12,163	13,340	12,765
North Dakota.....	102	105	113	8,430	9,070	9,660	12,070	11,589	11,698
Ohio.....	2,396	2,370	2,603	177,100	180,900	196,390	13,529	13,100	13,254
Oklahoma.....	274	254	226	44,360	46,370	51,430	6,185	5,469	4,394
Oregon.....	480	557	504	61,230	62,030	67,890	7,843	8,987	7,424
Pennsylvania.....	3,788	3,235	3,278	185,560	204,270	218,890	20,413	15,835	14,976
Rhode Island.....	523	572	628	18,740	18,080	18,400	27,927	31,651	34,130
South Carolina.....	412	408	417	48,740	50,460	54,120	8,447	8,094	7,705
South Dakota.....	55	70	62	9,150	9,460	11,550	5,988	7,398	5,368
Tennessee.....	1,039	1,293	1,659	63,680	66,390	70,820	16,320	19,474	23,426
Texas.....	4,757	4,989	5,427	365,270	389,550	441,410	13,023	12,806	12,295
Utah.....	650	814	765	45,570	45,110	51,340	14,268	18,043	14,901
Vermont.....	182	171	108	11,420	12,770	12,760	15,926	13,371	8,464
Virginia.....	6,213	8,214	8,754	209,280	236,650	254,710	29,687	34,711	34,368
Washington.....	2,292	2,388	4,708	150,230	160,960	183,900	15,257	14,834	25,601
West Virginia.....	367	773	217	16,220	16,040	16,560	22,651	48,163	13,104
Wisconsin.....	657	648	671	93,320	93,590	99,380	7,042	6,926	6,752
Wyoming.....	41	34	36	6,130	7,350	8,110	6,704	4,564	4,439
Puerto Rico.....	112	101	86	19,940	20,950	NA	5,628	4,842	NA

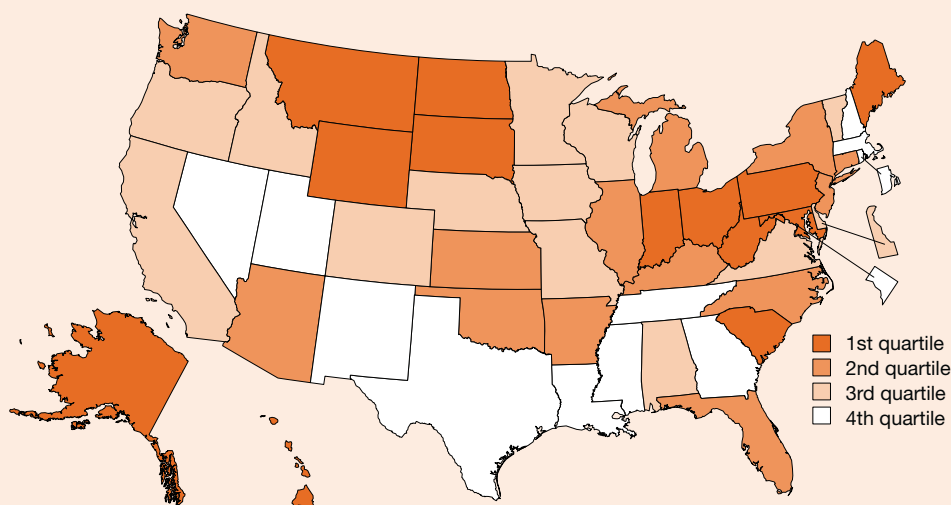
NOTES: Only 11 agencies required to report federal R&D obligations: Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security (established in 2002), Interior, and Transportation; Environmental Protection Agency; National Aeronautics and Space Administration; and National Science Foundation. These obligations represent approximately 98% of total federal R&D obligations. National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES). OES estimates for 2003 S&E occupations based on November data; estimates for remaining years based upon May data.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Federal Funds for Research and Development (various years); and Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

State Agency R&D Expenditures per \$1 Million of Gross Domestic Product

Figure 8-36

State agency R&D expenditures per \$1 million of gross domestic product: 2007



1st quartile (\$612.20–\$152.40)	2nd quartile (\$137.98–\$67.99)	3rd quartile (\$67.97–\$40.32)	4th quartile (\$37.94–\$8.95)
Alaska †	Arizona	Alabama †	District of Columbia
Hawaii †	Arkansas †	California	Georgia
Indiana	Connecticut	Colorado	Louisiana †
Maine †	Florida	Delaware †	Massachusetts
Maryland	Illinois	Idaho †	Mississippi †
Montana †	Kansas †	Iowa	Nevada †
North Dakota †	Kentucky †	Minnesota	New Hampshire †
Ohio	Michigan	Missouri	New Mexico †
Pennsylvania	New Jersey	Nebraska †	Rhode Island †
South Carolina †	New York	Oregon	Tennessee
South Dakota †	North Carolina	Vermont †	Texas
West Virginia †	Oklahoma †	Virginia	Utah
Wyoming †	Washington	Wisconsin	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of State Research and Development Expenditures; and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-36.

Findings

- Nationally, state government agencies spent a total of \$1.2 billion on R&D in 2007. This represented \$89 for each \$1 million of a state's GDP.
- State agency R&D expenditures accounted for 0.34% of total R&D expenditures in 2007, indicating that most R&D was funded by nonstate sources.
- In 2007, the state values for this indicator ranged from \$618 per \$1 million to \$9 per \$1 million of state GDP, reflecting varying approaches to the role of state government agencies in the funding of R&D.
- A substantial number of EPSCoR states are among those with the highest values for this indicator, suggesting that there is a state-level effort to improve R&D infrastructure in these states, not just a federal effort.

This indicator measures the ratio between the amount of state agency R&D funding and the size of a state's economy. State R&D expenditures include state-administered funds from all sources that support R&D performed by either a state agency or an external performer.

Data on state R&D funding come from National Science Foundation (NSF) surveys of state agencies covering 2006 and 2007 expenditures. The data cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Although the surveys are limited to R&D activities, the data may include some expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

Because of differences in the survey populations, definition of covered R&D activities, and collection methods, the results of previous NSF surveys on state government R&D are not comparable. Data for the value of gross domestic product (GDP) and for R&D expenditures are shown in current dollars.

Table 8-36

State agency R&D expenditures per \$1 million of gross domestic product, by state: 2006 and 2007

State	State agency R&D expenditures (current \$)		State GDP (current \$millions)		State agency R&D(\$)/ \$1 million GDP	
	2006	2007	2006	2007	2006	2007
EPSCoR states.....	195,833,394	232,177,940	1,898,423	1,981,871	103	117
Non-EPSCoR states.....	824,010,424	989,262,653	11,133,340	11,641,354	74	85
Average EPSCoR state value.....	na	na	na	na	141	160
Average non-EPSCoR state value.....	na	na	na	na	96	111
United States.....	1,021,016,894	1,223,449,593	13,119,937	13,715,741	78	89
Alabama.....	7,269,319	7,340,365	158,566	164,524	46	45
Alaska.....	10,019,060	9,526,100	43,117	44,887	232	212
Arizona.....	37,151,471	20,442,635	237,397	245,952	157	83
Arkansas.....	4,869,648	7,658,199	90,864	95,116	54	81
California.....	107,793,045	91,842,652	1,742,172	1,801,762	62	51
Colorado.....	8,997,236	11,924,981	226,266	235,848	40	51
Connecticut.....	19,209,064	29,285,710	204,964	212,252	94	138
Delaware.....	2,812,102	2,611,108	59,589	61,545	47	42
District of Columbia.....	1,173,076	2,009,000	88,174	92,516	13	22
Florida.....	42,329,624	96,968,573	716,505	741,861	59	131
Georgia.....	10,620,188	4,886,946	376,410	391,241	28	12
Hawaii.....	12,067,849	22,643,330	58,676	62,019	206	365
Idaho.....	2,280,873	2,739,006	48,441	52,110	47	53
Illinois.....	37,184,281	41,974,809	583,990	617,409	64	68
Indiana.....	6,220,575	40,534,381	238,693	249,229	26	163
Iowa.....	13,564,062	6,790,053	121,945	129,911	111	52
Kansas.....	14,348,384	11,752,696	110,645	116,986	130	100
Kentucky.....	17,558,997	11,960,634	146,415	152,099	120	79
Louisiana.....	11,216,568	6,587,314	203,167	207,407	55	32
Maine.....	17,509,051	27,525,552	46,340	48,021	378	573
Maryland.....	24,945,119	40,298,691	257,577	264,426	97	152
Massachusetts.....	10,729,419	5,600,189	335,313	352,178	32	16
Michigan.....	75,016,589	32,849,159	375,759	379,934	200	86
Minnesota.....	6,219,201	10,529,048	242,095	252,472	26	42
Mississippi.....	2,744,882	2,893,892	84,586	87,652	32	33
Missouri.....	18,465,303	15,567,277	220,092	229,027	84	68
Montana.....	8,606,319	8,200,230	31,994	34,266	269	239
Nebraska.....	5,602,163	4,043,480	75,290	80,360	74	50
Nevada.....	1,397,463	1,748,776	123,054	129,314	11	14
New Hampshire.....	2,040,544	1,685,178	56,073	57,820	36	29
New Jersey.....	25,900,482	59,747,701	448,426	461,295	58	130
New Mexico.....	3,105,000	672,921	72,161	75,192	43	9
New York.....	103,597,135	128,361,166	1,028,320	1,105,020	101	116
North Carolina.....	14,344,310	37,607,109	380,932	390,467	38	96
North Dakota.....	21,062,090	9,908,722	25,851	28,518	815	347
Ohio.....	55,068,629	114,086,509	451,600	462,506	122	247
Oklahoma.....	8,922,036	10,731,050	130,094	136,374	69	79
Oregon.....	7,382,722	7,389,914	150,984	158,268	49	47
Pennsylvania.....	117,320,158	103,973,448	508,769	533,212	231	195
Rhode Island.....	150,000	1,771,949	45,733	46,699	3	38
South Carolina.....	22,427,746	31,493,843	146,211	151,703	153	208
South Dakota.....	5,791,586	5,473,603	32,008	35,211	181	155
Tennessee.....	5,355,000	4,549,998	235,753	245,162	23	19
Texas.....	28,019,645	29,650,947	1,068,119	1,148,531	26	26
Utah.....	3,214,170	2,752,228	97,963	105,574	33	26
Vermont.....	1,680,533	1,529,805	23,628	24,627	71	62
Virginia.....	11,579,623	15,486,526	368,604	384,132	31	40
Washington.....	22,834,218	23,333,431	291,298	310,279	78	75
West Virginia.....	6,024,577	22,179,830	56,016	57,877	108	383
Wisconsin.....	10,949,155	12,828,572	223,394	233,406	49	55
Wyoming.....	6,326,604	19,500,357	29,904	31,544	212	618
Puerto Rico.....	1,458,790	2,326,241	NA	NA	NA	NA

na = not applicable; NA = not available

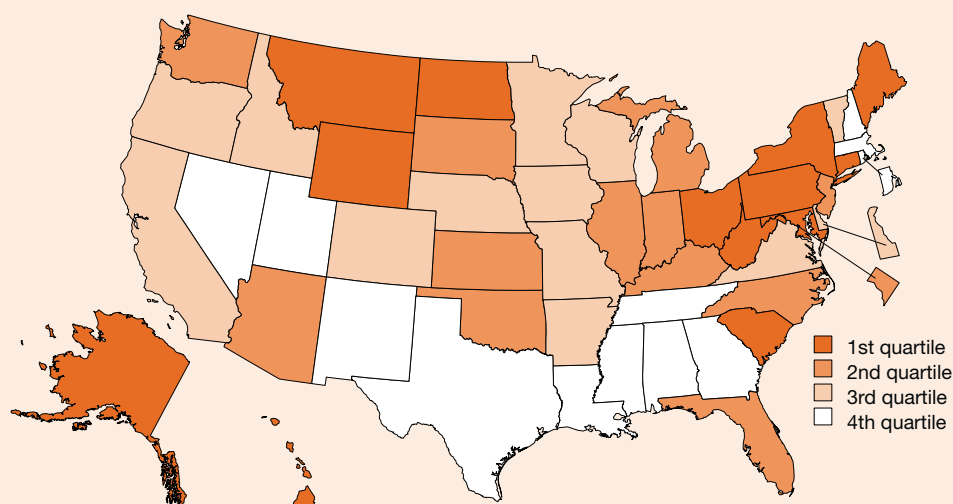
EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product

NOTES: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of State Research and Development Expenditures (FY 2006 and FY 2007); Bureau of Economic Analysis, Gross Domestic Product data; and Government of Puerto Rico, Office of the Governor.

State Agency R&D Expenditures per Civilian Worker

Figure 8-37
State agency R&D expenditures per civilian worker: 2007



1st quartile (\$69.87–\$14.02)	2nd quartile (\$13.97–\$6.19)	3rd quartile (\$6.10–\$3.73)	4th quartile (\$3.49–\$0.74)
Alaska † Connecticut Hawaii † Maine † Maryland Montana † New York North Dakota † Ohio Pennsylvania South Carolina † West Virginia † Wyoming †	Arizona District of Columbia Florida Illinois Indiana Kansas † Kentucky † Michigan New Jersey North Carolina Oklahoma † South Dakota † Washington	Arkansas † California Colorado Delaware † Idaho † Iowa Minnesota Missouri Nebraska † Oregon Vermont † Virginia Wisconsin	Alabama † Georgia Louisiana † Massachusetts Mississippi † Nevada † New Hampshire † New Mexico † Rhode Island † Tennessee Texas Utah

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of State Research and Development Expenditures; and Bureau of Labor Statistics, Local Area Unemployment Statistics. See table 8-37.

Findings

- In 2007, state government agency R&D expenditures averaged \$8.42 per civilian worker nationwide.
- State agency R&D funding per civilian worker across the United States was approximately 1% of the \$764 in federal R&D obligations per worker in 2007.
- State agency R&D spending per civilian worker varied greatly among the states in 2007, ranging from a high of \$69.87 to a low of \$0.74.
- A number of EPSCoR states had high values for this indicator.

This indicator measures the extent of R&D activity funded by state government agencies relative to the size of the state's civilian workforce. State R&D expenditures include state-administered funds from all sources that support R&D performed by either a state agency or an external performer.

Data on state R&D funding come from National Science Foundation surveys of state agencies covering 2006 and 2007 expenditures. The data cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Although the surveys are limited to R&D activities, the data may include some expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

The size of a state's civilian workforce is a nonseasonally adjusted annual estimate of employed workers based on the Bureau of Labor Statistics Current Population Survey, which assigns workers to a location based on residence. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations.

Table 8-37

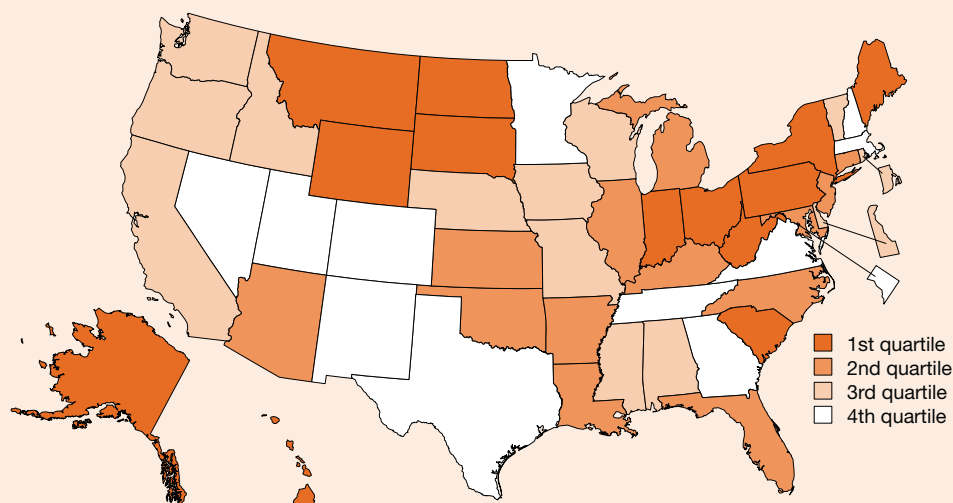
State agency R&D expenditures per civilian worker, by state: 2006 and 2007

State	State agency R&D expenditures (current \$)		Civilian workers		State agency R&D expenditures/civilian worker (\$)	
	2006	2007	2006	2007	2006	2007
United States.....	1,022,475,684	1,225,775,834	144,581,912	145,595,173	7.07	8.42
Alabama.....	7,269,319	7,340,365	2,120,573	2,105,951	3.43	3.49
Alaska.....	10,019,060	9,526,100	323,531	330,587	30.97	28.82
Arizona.....	37,151,471	20,442,635	2,854,381	2,913,695	13.02	7.02
Arkansas.....	4,869,648	7,658,199	1,292,886	1,293,852	3.77	5.92
California.....	107,793,045	91,842,652	17,029,307	17,208,903	6.33	5.34
Colorado.....	8,997,236	11,924,981	2,537,037	2,602,015	3.55	4.58
Connecticut.....	19,209,064	29,285,710	1,765,075	1,780,473	10.88	16.45
Delaware.....	2,812,102	2,611,108	424,506	427,766	6.62	6.10
District of Columbia.....	1,173,076	2,009,000	296,957	307,049	3.95	6.54
Florida.....	42,329,624	96,968,573	8,692,761	8,779,299	4.87	11.05
Georgia.....	10,620,188	4,886,946	4,522,025	4,602,947	2.35	1.06
Hawaii.....	12,067,849	22,643,330	628,277	631,911	19.21	35.83
Idaho.....	2,280,873	2,739,006	723,621	733,652	3.15	3.73
Illinois.....	37,184,281	41,974,809	6,315,715	6,361,750	5.89	6.60
Indiana.....	6,220,575	40,534,381	3,108,806	3,065,590	2.00	13.22
Iowa.....	13,564,062	6,790,053	1,602,849	1,598,261	8.46	4.25
Kansas.....	14,348,384	11,752,696	1,400,169	1,418,666	10.25	8.28
Kentucky.....	17,558,997	11,960,634	1,922,163	1,932,028	9.14	6.19
Louisiana.....	11,216,568	6,587,314	1,910,348	1,921,343	5.87	3.43
Maine.....	17,509,051	27,525,552	678,843	671,337	25.79	41.00
Maryland.....	24,945,119	40,298,691	2,892,620	2,873,512	8.62	14.02
Massachusetts.....	10,729,419	5,600,189	3,234,860	3,255,611	3.32	1.72
Michigan.....	75,016,589	32,849,159	4,730,291	4,659,927	15.86	7.05
Minnesota.....	6,219,201	10,529,048	2,822,297	2,796,737	2.20	3.76
Mississippi.....	2,744,882	2,893,892	1,218,664	1,231,743	2.25	2.35
Missouri.....	18,465,303	15,567,277	2,885,857	2,878,399	6.40	5.41
Montana.....	8,606,319	8,200,230	478,162	485,615	18.00	16.89
Nebraska.....	5,602,163	4,043,480	945,270	953,769	5.93	4.24
Nevada.....	1,397,463	1,748,776	1,240,868	1,271,472	1.13	1.38
New Hampshire.....	2,040,544	1,685,178	711,512	712,048	2.87	2.37
New Jersey.....	25,900,482	59,747,701	4,309,021	4,276,561	6.01	13.97
New Mexico.....	3,105,000	672,921	895,623	909,968	3.47	0.74
New York.....	103,597,135	128,361,166	9,072,733	9,087,278	11.42	14.13
North Carolina.....	14,344,310	37,607,109	4,250,619	4,308,624	3.37	8.73
North Dakota.....	21,062,090	9,908,722	346,359	354,003	60.81	27.99
Ohio.....	55,068,629	114,086,509	5,609,056	5,640,081	9.82	20.23
Oklahoma.....	8,922,036	10,731,050	1,650,877	1,657,964	5.40	6.47
Oregon.....	7,382,722	7,389,914	1,796,165	1,827,285	4.11	4.04
Pennsylvania.....	117,320,158	103,973,448	6,009,858	6,013,406	19.52	17.29
Rhode Island.....	150,000	1,771,949	547,618	547,927	0.27	3.23
South Carolina.....	22,427,746	31,493,843	1,988,378	2,011,255	11.28	15.66
South Dakota.....	5,791,586	5,473,603	417,100	429,495	13.89	12.74
Tennessee.....	5,355,000	4,549,998	2,835,530	2,893,748	1.89	1.57
Texas.....	28,019,645	29,650,947	10,921,673	10,992,828	2.57	2.70
Utah.....	3,214,170	2,752,228	1,272,801	1,325,480	2.53	2.08
Vermont.....	1,680,533	1,529,805	348,026	340,073	4.83	4.50
Virginia.....	11,579,623	15,486,526	3,878,988	3,930,984	2.99	3.94
Washington.....	22,834,218	23,333,431	3,160,350	3,253,475	7.23	7.17
West Virginia.....	6,024,577	22,179,830	767,134	771,837	7.85	28.74
Wisconsin.....	10,949,155	12,828,572	2,918,155	2,937,903	3.75	4.37
Wyoming.....	6,326,604	19,500,357	275,617	279,090	22.95	69.87
Puerto Rico.....	1,458,790	2,326,241	1,260,703	1,241,426	1.16	1.87

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of State Research and Development Expenditures (FY 2006 and FY 2007); Bureau of Labor Statistics, Local Area Unemployment Statistics; and Government of Puerto Rico, Office of the Governor.

State Agency R&D Expenditures per Individual in S&E Occupation

Figure 8-38
State agency R&D expenditures per individual in S&E occupation: 2007



1st quartile (\$2,404–\$398)	2nd quartile (\$397–\$155)	3rd quartile (\$152–\$96)	4th quartile (\$86–\$20)
Alaska †	Arizona	Alabama †	Colorado
Hawaii †	Arkansas †	California	District of Columbia
Indiana	Connecticut	Delaware †	Georgia
Maine †	Florida	Idaho †	Massachusetts
Montana †	Illinois	Iowa	Minnesota
New York	Kansas †	Mississippi †	Nevada †
North Dakota †	Kentucky †	Missouri	New Hampshire †
Ohio	Louisiana †	Nebraska †	New Mexico †
Pennsylvania	Maryland	Oregon	Tennessee
South Carolina †	Michigan	Rhode Island †	Texas
South Dakota †	New Jersey	Vermont †	Utah
West Virginia †	North Carolina	Washington	Virginia
Wyoming †	Oklahoma †	Wisconsin	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of State Research and Development Expenditures; and Bureau of Labor Statistics, Occupational Employment and Wage Estimates. See table 8-38.

Findings

- In 2007, the average state agency R&D expenditure per person employed in an S&E occupation was \$219, indicating that state agency funding for R&D was a very small fraction of total R&D funding.
- Nationally, state government agencies spent about \$1.2 billion for R&D in 2007. By comparison, the federal government obligated more than \$111 billion for R&D in 2007, about \$20,000 for each person employed in an S&E occupation.
- State agency R&D funding per person employed in an S&E occupation ranged from \$2,404 to \$20 per state in 2007.
- Several EPSCoR states had the highest state agency R&D spending per S&E worker.

This indicator measures the extent of the R&D activity funded by a state's government agencies relative to the number of individuals engaged in S&E occupations in the state.

Data on state R&D funding come from National Science Foundation surveys of state agencies covering 2006 and 2007 expenditures. The data cover funding administered by state government departments, agencies, independent commissions, and other state-run entities. They exclude state-run colleges and universities as well as laboratories or experiment stations controlled by state universities; funding administered by these institutions is classified as academic R&D. The data also exclude state legislatures' direct appropriations to nonstate agencies. Although the surveys are limited to R&D activities, the data may include some expenditures for non-R&D activities such as commercialization, environmental testing, and routine survey work.

The denominator of this indicator measures individuals with bachelor's or higher degrees who work in S&E occupations. S&E occupations are defined by standard occupational codes. They include engineers and computer, mathematical, life, physical, and social scientists. They exclude managers, technicians, elementary and secondary schoolteachers, and medical personnel. State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work. Because OES data do not classify postsecondary teachers by field, in these data, faculty teaching in S&E fields are not counted as working in S&E occupations.

Table 8-38

State agency R&D expenditures per individual in S&E occupation, by state: 2006 and 2007

State	State agency R&D expenditures (current \$)		Individuals in S&E occupations		State agency R&D expenditures/individual in S&E occupation (\$)	
	2006	2007	2006	2007	2006	2007
United States.....	1,022,475,684	1,225,775,834	5,407,710	5,591,990	189	219
Alabama.....	7,269,319	7,340,365	66,100	69,650	110	105
Alaska.....	10,019,060	9,526,100	10,720	11,990	935	795
Arizona.....	37,151,471	20,442,635	98,110	102,380	379	200
Arkansas.....	4,869,648	7,658,199	24,860	28,460	196	269
California.....	107,793,045	91,842,652	730,010	753,570	148	122
Colorado.....	8,997,236	11,924,981	133,730	138,990	67	86
Connecticut.....	19,209,064	29,285,710	79,380	80,280	242	365
Delaware.....	2,812,102	2,611,108	21,550	22,140	130	118
District of Columbia.....	1,173,076	2,009,000	64,120	63,150	18	32
Florida.....	42,329,624	96,968,573	246,190	244,140	172	397
Georgia.....	10,620,188	4,886,946	136,470	136,880	78	36
Hawaii.....	12,067,849	22,643,330	18,940	18,740	637	1,208
Idaho.....	2,280,873	2,739,006	NA	24,330	NA	113
Illinois.....	37,184,281	41,974,809	222,470	225,180	167	186
Indiana.....	6,220,575	40,534,381	80,110	83,080	78	488
Iowa.....	13,564,062	6,790,053	43,670	45,430	311	149
Kansas.....	14,348,384	11,752,696	48,620	50,040	295	235
Kentucky.....	17,558,997	11,960,634	44,680	49,030	393	244
Louisiana.....	11,216,568	6,587,314	40,180	38,450	279	171
Maine.....	17,509,051	27,525,552	15,950	15,960	1,098	1,725
Maryland.....	24,945,119	40,298,691	159,470	162,540	156	248
Massachusetts.....	10,729,419	5,600,189	198,670	205,610	54	27
Michigan.....	75,016,589	32,849,159	208,520	212,040	360	155
Minnesota.....	6,219,201	10,529,048	125,930	129,840	49	81
Mississippi.....	2,744,882	2,893,892	24,910	25,520	110	113
Missouri.....	18,465,303	15,567,277	96,420	102,170	192	152
Montana.....	8,606,319	8,200,230	13,010	13,240	662	619
Nebraska.....	5,602,163	4,043,480	32,500	31,420	172	129
Nevada.....	1,397,463	1,748,776	26,930	26,920	52	65
New Hampshire.....	2,040,544	1,685,178	27,680	28,450	74	59
New Jersey.....	25,900,482	59,747,701	176,460	186,120	147	321
New Mexico.....	3,105,000	672,921	30,800	33,440	101	20
New York.....	103,597,135	128,361,166	306,810	322,520	338	398
North Carolina.....	14,344,310	37,607,109	138,790	142,970	103	263
North Dakota.....	21,062,090	9,908,722	9,360	9,660	2,250	1,026
Ohio.....	55,068,629	114,086,509	185,190	196,390	297	581
Oklahoma.....	8,922,036	10,731,050	50,770	51,430	176	209
Oregon.....	7,382,722	7,389,914	64,520	67,890	114	109
Pennsylvania.....	117,320,158	103,973,448	214,910	218,890	546	475
Rhode Island.....	150,000	1,771,949	18,060	18,400	8	96
South Carolina.....	22,427,746	31,493,843	53,230	54,120	421	582
South Dakota.....	5,791,586	5,473,603	10,120	11,550	572	474
Tennessee.....	5,355,000	4,549,998	67,040	70,820	80	64
Texas.....	28,019,645	29,650,947	408,710	441,410	69	67
Utah.....	3,214,170	2,752,228	49,690	51,340	65	54
Vermont.....	1,680,533	1,529,805	12,780	12,760	131	120
Virginia.....	11,579,623	15,486,526	251,720	254,710	46	61
Washington.....	22,834,218	23,333,431	171,780	183,900	133	127
West Virginia.....	6,024,577	22,179,830	17,150	16,560	351	1,339
Wisconsin.....	10,949,155	12,828,572	96,860	99,380	113	129
Wyoming.....	6,326,604	19,500,357	7,640	8,110	828	2,404
Puerto Rico.....	1,458,790	2,326,241	23,850	NA	61	NA

NA = not available

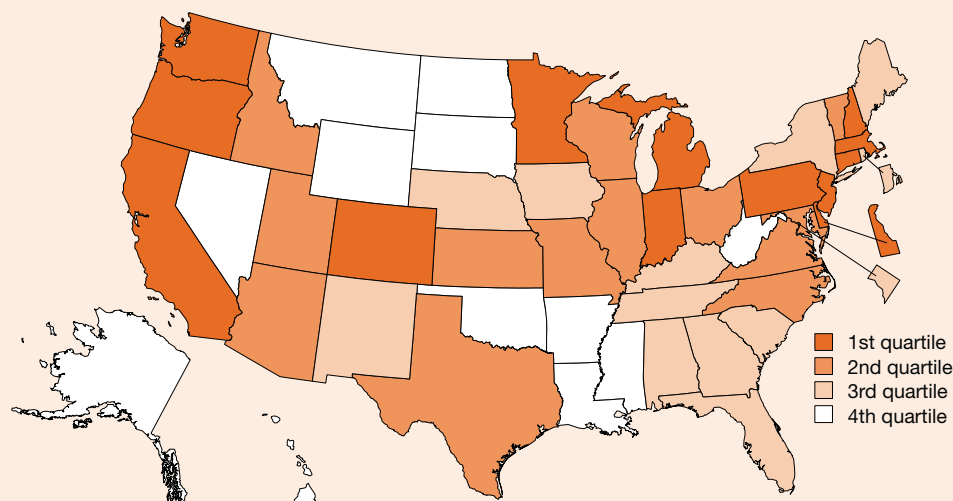
NOTES: National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES). OES estimates for 2006 and 2007 S&E occupations based on May data.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of State Research and Development Expenditures (FY 2006, FY 2007); and Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

Business-Performed R&D as Share of Private-Industry Output

Figure 8-39

Business-performed R&D as share of private-industry output: 2007



1st quartile (6.08%–2.16%)	2nd quartile (2.03%–1.30%)	3rd quartile (1.28%–0.61%)	4th quartile (0.52%–0.14%)
California Colorado Connecticut Delaware † Indiana Massachusetts Michigan Minnesota New Hampshire † New Jersey Oregon Pennsylvania Washington	Arizona Idaho † Illinois Kansas † Maryland Missouri North Carolina Ohio Texas Utah Vermont † Virginia Wisconsin	Alabama † District of Columbia Florida Georgia Iowa Kentucky † Maine † Nebraska † New Mexico † New York Rhode Island † South Carolina † Tennessee	Alaska † Arkansas † Hawaii † Louisiana † Mississippi † Montana † Nevada † North Dakota † Oklahoma † South Dakota † West Virginia † Wyoming †

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development; and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-39.

Findings

- The amount of R&D performed by business rose from nearly \$164 billion in 1998 to about \$266 billion in 2007, an increase of more than 60% (in current dollars).
- The value of this indicator exhibited little overall change between 1998 and 2007.
- Business R&D was concentrated in a few states—only 12 states had indicator values that met or exceeded the national average in 2007.

This indicator measures the role of R&D in a state's business activity. Business R&D focuses on projects that are expected to yield new or improved products, processes, or services and to bring direct benefits to a company. A high value for this indicator shows that the businesses within a state are making a significant investment in their R&D activities.

Because industries differ in their reliance on R&D, the indicator reflects state differences in industrial structure as much as the behavior or priorities of individual businesses. Estimates for states with smaller economies are generally less precise than those for states with larger economies.

The methodology for making state-level assignments of the business R&D reported by companies with operations in multiple states changed in 1998. Therefore, pre-1998 data on the amount of R&D performed by industry in states are not comparable.

Table 8-39

Business-performed R&D as share of private-industry output, by state: 1998, 2002, and 2007

State	Business-performed R&D (current \$millions)			Private-industry output (current \$millions)			Business-performed R&D/ private-industry output (%)		
	1998	2002	2007	1998	2002	2007	1998	2002	2007
United States.....	163,658	185,505	265,919	7,652,500	9,131,170	12,064,609	2.14	2.03	2.20
Alabama.....	845	846	1,771	89,994	104,211	138,392	0.94	0.81	1.28
Alaska.....	37	51	58	18,175	23,302	36,914	0.20	0.22	0.16
Arizona.....	1,801	3,201	3,846	120,484	150,429	215,329	1.49	2.13	1.79
Arkansas.....	213	225	339	54,258	62,883	82,061	0.39	0.36	0.41
California.....	32,856	42,177	64,187	965,937	1,184,559	1,596,045	3.40	3.56	4.02
Colorado.....	3,180	2,823	5,223	126,013	160,289	207,494	2.52	1.76	2.52
Connecticut.....	3,346	6,077	9,444	132,955	150,755	192,695	2.52	4.03	4.90
Delaware.....	1,356	1,219	1,472	33,652	41,196	56,314	4.03	2.96	2.61
District of Columbia...	D	194	379	32,710	43,937	62,311	1.83	0.44	0.61
Florida.....	3,265	3,707	4,569	365,813	459,933	655,459	0.89	0.81	0.70
Georgia.....	1,617	2,107	2,788	224,870	267,441	339,136	0.72	0.79	0.82
Hawaii.....	55	103	218	29,201	33,619	47,923	0.19	0.31	0.45
Idaho.....	1,103	992	726	25,510	31,197	45,004	4.32	3.18	1.61
Illinois.....	7,318	7,616	11,362	384,342	438,363	558,823	1.90	1.74	2.03
Indiana.....	2,922	3,572	4,939	161,797	184,923	224,499	1.81	1.93	2.20
Iowa.....	750	753	1,202	73,908	85,652	114,859	1.01	0.88	1.05
Kansas.....	1,384	1,427	1,304	65,697	77,183	100,600	2.11	1.85	1.30
Kentucky.....	606	656	890	94,081	103,514	128,916	0.64	0.63	0.69
Louisiana.....	377	248	373	103,343	116,505	184,848	0.36	0.21	0.20
Maine.....	137	250	265	27,363	33,121	41,206	0.50	0.75	0.64
Maryland.....	1,905	3,800	3,665	133,482	168,770	216,069	1.43	2.25	1.70
Massachusetts.....	10,367	10,609	19,488	214,890	258,688	320,565	4.82	4.10	6.08
Michigan.....	12,554	13,565	15,736	278,874	313,384	337,072	4.50	4.33	4.67
Minnesota.....	3,367	4,460	6,636	148,057	177,427	226,097	2.27	2.51	2.94
Mississippi.....	183	224	279	50,894	56,215	72,521	0.36	0.40	0.38
Missouri.....	1,505	1,592	2,736	146,453	166,436	200,977	1.03	0.96	1.36
Montana.....	63	66	134	16,607	19,565	28,927	0.38	0.34	0.46
Nebraska.....	195	342	489	44,485	50,901	69,174	0.44	0.67	0.71
Nevada.....	476	339	567	56,995	72,826	116,816	0.84	0.47	0.49
New Hampshire.....	1,138	1,153	1,814	35,812	41,991	52,268	3.18	2.75	3.47
New Jersey.....	11,107	11,566	17,892	282,938	335,111	413,706	3.93	3.45	4.32
New Mexico.....	1,450	331	568	37,455	41,702	62,107	3.87	0.79	0.91
New York.....	10,283	9,234	10,916	614,396	736,066	993,104	1.67	1.25	1.10
North Carolina.....	3,483	3,704	6,829	212,790	259,825	338,159	1.64	1.43	2.02
North Dakota.....	46	154	126	14,277	16,671	24,359	0.32	0.92	0.52
Ohio.....	5,742	6,230	7,265	312,647	346,524	410,857	1.84	1.80	1.77
Oklahoma.....	369	412	527	65,997	80,492	114,350	0.56	0.51	0.46
Oregon.....	1,345	2,320	3,629	88,532	100,222	138,781	1.52	2.31	2.61
Pennsylvania.....	7,393	7,064	10,387	324,847	381,405	480,942	2.28	1.85	2.16
Rhode Island.....	1,332	1,121	411	25,892	32,294	40,846	5.14	3.47	1.01
South Carolina.....	996	1,054	1,426	87,771	102,565	126,253	1.13	1.03	1.13
South Dakota.....	40	53	132	17,932	23,084	30,910	0.22	0.23	0.43
Tennessee.....	2,440	1,289	1,638	142,438	169,564	218,172	1.71	0.76	0.75
Texas.....	8,984	10,744	13,889	558,165	691,968	1,026,886	1.61	1.55	1.35
Utah.....	1,119	1,116	1,764	51,610	61,934	91,319	2.17	1.80	1.93
Vermont.....	114	286	413	13,976	16,974	21,249	0.82	1.68	1.94
Virginia.....	2,540	2,920	4,840	186,444	235,685	314,689	1.36	1.24	1.54
Washington.....	7,072	8,579	12,687	168,427	198,461	266,138	4.20	4.32	4.77
West Virginia.....	D	264	233	33,440	37,308	47,466	1.00	0.71	0.49
Wisconsin.....	1,929	2,649	3,411	143,368	167,489	207,614	1.35	1.58	1.64
Wyoming.....	20	21	37	12,506	16,611	27,388	0.16	0.13	0.14
Puerto Rico.....	NA	NA	NA	NA	NA	NA	NA	NA	NA

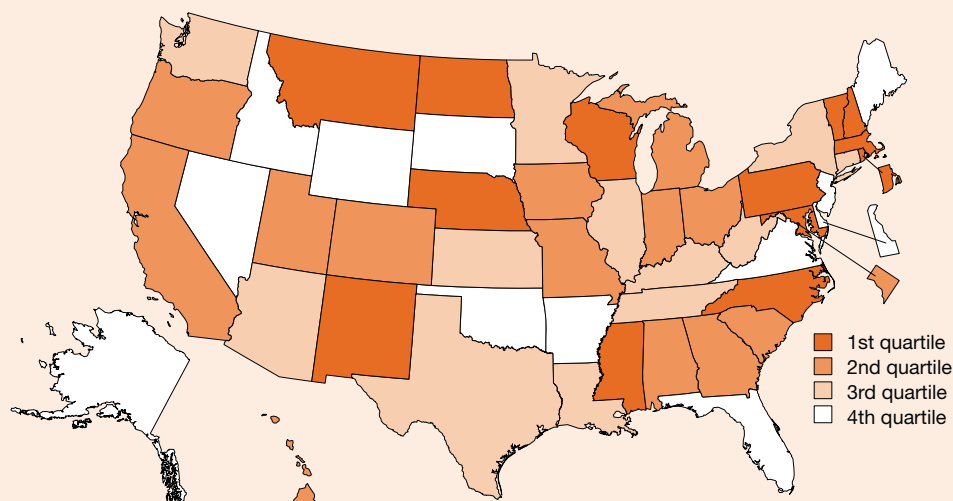
D = suppressed to avoid disclosure of confidential information; NA = not available

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development (various years); and Bureau of Economic Analysis, Gross Domestic Product data.

Academic R&D per \$1,000 of Gross Domestic Product

Figure 8-40

Academic R&D per \$1,000 of gross domestic product: 2008



1st quartile (\$10.05–\$4.43)	2nd quartile (\$4.37–\$3.68)	3rd quartile (\$3.53–\$2.66)	4th quartile (\$2.65–\$1.45)
Maryland	Alabama †	Arizona	Alaska †
Massachusetts	California	Connecticut	Arkansas †
Mississippi †	Colorado	Illinois	Delaware †
Montana †	District of Columbia	Kansas †	Florida
Nebraska †	Georgia	Kentucky †	Idaho †
New Hampshire †	Hawaii †	Louisiana †	Maine †
New Mexico †	Indiana	Minnesota	Nevada †
North Carolina	Iowa	New York	New Jersey
North Dakota †	Michigan	Tennessee	Oklahoma †
Pennsylvania	Missouri	Texas	South Dakota †
Rhode Island †	Ohio	Washington	Virginia
Vermont †	Oregon	West Virginia †	Wyoming †
Wisconsin	South Carolina †		
	Utah		

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Academic Research and Development Expenditures; and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-40.

Findings

- Expenditures for research performed in academic institutions have doubled in a decade, rising from \$25.8 billion in 1998 to \$51.8 billion in 2008 (in current dollars).
- In the United States, growth in academic research increased more rapidly than GDP, causing the value of this indicator to increase by 23% between 1998 and 2008. Most of this change occurred between 1998 and 2003; there was no significant change between 2003 and 2008.
- The largest percentage increases in academic R&D as a share of GDP occurred in two EPSCoR states, where the value of this indicator more than doubled between 1998 and 2008.
- The EPSCoR states were concentrated in the highest and lowest quartiles of the state ranking for this indicator, showing considerable variation in the amount of academic R&D being conducted in each EPSCoR state relative to the size of the state's economy.

This indicator measures the extent of spending on academic research performed in a state relative to the size of the state's economy. Academic R&D is more basic and less product-oriented than R&D performed by business. It can be a valuable basis for future economic development. In this indicator, data for Maryland exclude expenditures by the Applied Physics Laboratory at the Johns Hopkins University.

Data for the value of gross domestic product (GDP) by state and for R&D expenditures are shown in current dollars.

Table 8-40

Academic R&D per \$1,000 of gross domestic product, by state: 1998, 2003, and 2008

State	Academic R&D (current \$thousands)			State GDP (current \$millions)			Academic R&D (\$)/ \$1,000 GDP		
	1998	2003	2008	1998	2003	2008	1998	2003	2008
EPSCoR states.....	3,441,370	5,430,010	6,948,937	1,231,448	1,540,024	2,068,625	2.79	3.53	3.36
Non-EPSCoR states.....	22,097,707	34,288,279	44,466,163	7,396,530	9,274,429	11,999,705	2.99	3.70	3.71
Average EPSCoR state value	na	na	na	na	na	na	2.84	3.69	3.51
Average non-EPSCoR state value	na	na	na	na	na	na	3.18	3.90	3.90
United States.....	25,771,999	39,999,163	51,784,120	8,679,657	10,886,172	14,165,565	2.97	3.67	3.66
Alabama.....	442,088	550,756	707,801	106,656	130,210	170,014	4.14	4.23	4.16
Alaska.....	76,358	142,413	111,418	23,165	31,219	47,912	3.30	4.56	2.33
Arizona.....	405,999	617,978	831,192	137,581	182,011	248,888	2.95	3.40	3.34
Arkansas.....	117,108	183,908	246,786	61,861	75,685	98,331	1.89	2.43	2.51
California.....	3,392,094	5,357,900	7,026,354	1,085,884	1,406,511	1,846,757	3.12	3.81	3.80
Colorado.....	489,419	694,862	924,073	143,160	187,397	248,603	3.42	3.71	3.72
Connecticut.....	406,618	594,507	731,711	145,373	169,885	216,174	2.80	3.50	3.38
Delaware.....	72,779	104,650	133,231	36,831	48,587	61,828	1.98	2.15	2.15
District of Columbia.....	232,922	280,874	369,020	51,682	71,719	97,235	4.51	3.92	3.80
Florida.....	712,704	1,204,592	1,591,774	417,169	559,021	744,120	1.71	2.15	2.14
Georgia.....	804,151	1,176,523	1,521,486	255,612	317,922	397,756	3.15	3.70	3.83
Hawaii.....	148,007	184,602	278,751	37,549	46,441	63,847	3.94	3.97	4.37
Idaho.....	72,395	105,039	113,482	29,800	38,148	52,747	2.43	2.75	2.15
Illinois.....	1,030,955	1,614,270	1,972,752	423,855	510,296	633,697	2.43	3.16	3.11
Indiana.....	426,328	725,752	954,188	178,909	215,434	254,861	2.38	3.37	3.74
Iowa.....	358,613	498,669	527,769	83,665	102,210	135,702	4.29	4.88	3.89
Kansas.....	213,250	310,111	403,512	76,005	93,560	122,731	2.81	3.31	3.29
Kentucky.....	241,520	377,635	506,057	108,813	124,892	156,436	2.22	3.02	3.23
Louisiana.....	354,011	514,403	660,139	118,085	146,726	222,218	3.00	3.51	2.97
Maine.....	35,265	83,935	128,090	31,731	40,152	49,709	1.11	2.09	2.58
Maryland.....	1,330,288	2,040,747	2,747,001	161,954	213,306	273,333	8.21	9.57	10.05
Massachusetts.....	1,348,220	1,821,924	2,271,757	236,079	293,840	364,988	5.71	6.20	6.22
Michigan.....	882,700	1,390,083	1,593,654	309,431	359,030	382,544	2.85	3.87	4.17
Minnesota.....	367,779	517,912	698,920	164,897	208,179	262,847	2.23	2.49	2.66
Mississippi.....	152,683	324,236	406,459	60,513	72,259	91,782	2.52	4.49	4.43
Missouri.....	484,502	807,075	960,171	164,267	195,547	237,797	2.95	4.13	4.04
Montana.....	76,655	141,220	185,791	19,884	25,526	35,891	3.86	5.53	5.18
Nebraska.....	186,320	300,540	376,092	52,076	64,628	83,273	3.58	4.65	4.52
Nevada.....	83,888	154,515	190,893	63,635	87,828	131,233	1.32	1.76	1.45
New Hampshire.....	117,323	252,210	302,008	39,102	48,198	60,005	3.00	5.23	5.03
New Jersey.....	484,942	754,426	876,698	314,117	389,077	474,936	1.54	1.94	1.85
New Mexico.....	228,740	306,636	416,991	45,918	57,469	79,901	4.98	5.34	5.22
New York.....	1,929,694	3,078,092	4,044,815	686,906	850,243	1,144,481	2.81	3.62	3.53
North Carolina.....	899,507	1,397,859	1,980,833	242,904	306,018	400,192	3.70	4.57	4.95
North Dakota.....	56,945	133,615	180,764	16,936	21,672	31,208	3.36	6.17	5.79
Ohio.....	810,225	1,268,397	1,827,042	348,723	402,399	471,508	2.32	3.15	3.87
Oklahoma.....	208,873	295,098	333,230	79,341	103,452	146,448	2.63	2.85	2.28
Oregon.....	314,355	436,958	594,945	100,951	121,638	161,573	3.11	3.59	3.68
Pennsylvania.....	1,348,936	2,014,842	2,604,118	361,800	440,704	553,301	3.73	4.57	4.71
Rhode Island.....	111,979	187,131	236,627	29,537	39,357	47,364	3.79	4.75	5.00
South Carolina.....	248,474	435,328	576,219	102,945	127,885	156,384	2.41	3.40	3.68
South Dakota.....	25,474	49,977	91,797	20,771	27,418	36,959	1.23	1.82	2.48
Tennessee.....	346,742	600,004	787,122	160,872	200,279	252,127	2.16	3.00	3.12
Texas.....	1,697,344	2,764,769	3,744,182	629,209	828,797	1,223,511	2.70	3.34	3.06
Utah.....	249,147	385,158	425,683	60,168	75,428	109,777	4.14	5.11	3.88
Vermont.....	58,585	106,581	117,210	15,935	20,575	25,442	3.68	5.18	4.61
Virginia.....	497,209	776,067	1,052,601	226,569	302,540	397,025	2.19	2.57	2.65
Washington.....	543,239	871,113	1,058,170	195,794	240,813	322,778	2.77	3.62	3.28
West Virginia.....	64,150	125,417	170,869	39,500	46,452	61,652	1.62	2.70	2.77
Wisconsin.....	535,997	877,800	1,117,152	160,681	195,904	240,429	3.34	4.48	4.65
Wyoming.....	48,500	60,054	74,720	14,859	21,685	35,310	3.26	2.77	2.12
Puerto Rico.....	87,592	78,410	100,401	54,086	74,827	NA	1.62	1.05	NA

na = not applicable; NA = not available

EPSCoR = Experimental Program to Stimulate Competitive Research; GDP = gross domestic product

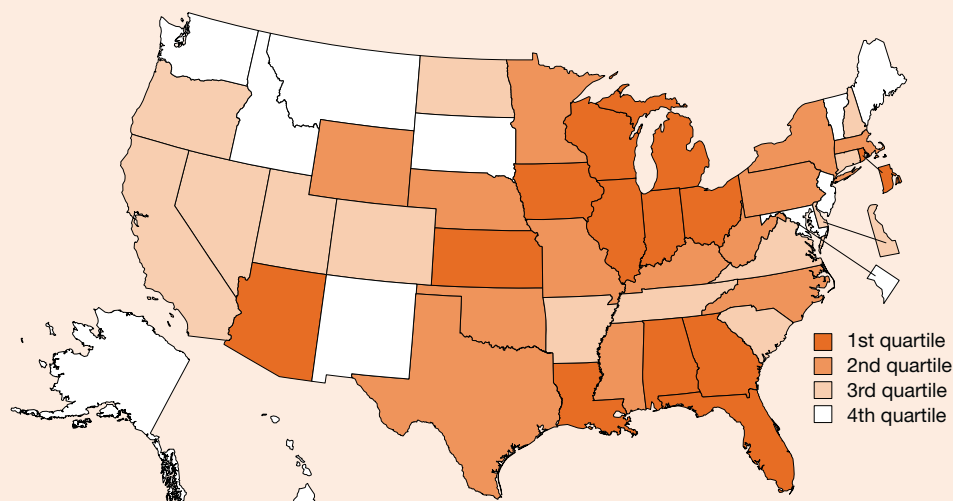
NOTES: Academic R&D reported for institutions with R&D over \$150,000. For Maryland, academic R&D excludes R&D performed by Applied Physics Laboratory at Johns Hopkins University. For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Academic Research and Development Expenditures (various years); Bureau of Economic Analysis, Gross Domestic Product data; and Government of Puerto Rico, Office of the Governor.

S&E Doctorates Conferred per 1,000 Employed S&E Doctorate Holders

Figure 8-41

S&E doctorates conferred per 1,000 employed S&E doctorate holders: 2006



1st quartile (85.5–56.9)	2nd quartile (56.5–46.9)	3rd quartile (43.4–35.6)	4th quartile (34.3–11.5)
Alabama †	Kentucky †	Arkansas †	Alaska †
Arizona	Massachusetts	California	District of Columbia
Florida	Minnesota	Colorado	Hawaii †
Georgia	Mississippi †	Connecticut	Idaho †
Illinois	Missouri	Delaware †	Maine †
Indiana	Nebraska †	Nevada †	Maryland
Iowa	New York	New Hampshire †	Montana †
Kansas †	North Carolina	North Dakota †	New Jersey
Louisiana †	Oklahoma †	Oregon	New Mexico †
Michigan	Pennsylvania	South Carolina †	South Dakota †
Ohio	Texas	Tennessee	Vermont †
Rhode Island †	West Virginia †	Utah	Washington
Wisconsin	Wyoming †	Virginia	

† EPSCoR state

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates and Survey of Doctorate Recipients. See table 8-41.

Findings

- In 2006, about 29,000 S&E doctorates were awarded by U.S. academic institutions, approximately 19% more than in 2001 and 12% more than in 1997.
- Nationwide, the value of this indicator declined between 1997 and 2006, reflecting an increase in the stock of employed S&E doctorate holders in the United States.
- Low state values on this indicator may indicate either a small S&E graduate-level educational program or a concentration of S&E doctorate-level employment opportunities that attract significant numbers of S&E doctorate holders who were educated elsewhere. Low-ranking EPSCoR states tend to fall into the former category.

This indicator provides a measure of the rate at which the states are training new S&E doctorate recipients for entry into the workforce. High values indicate relatively large production of new doctorate holders compared with the existing stock of employed doctorate holders. States with relatively low values may need to attract S&E doctorate holders from elsewhere to meet the needs of local employers.

Data on doctorates conferred and on employed doctorate holders include those in computer sciences; mathematics; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data derive from the National Science Foundation's Survey of Doctorate Recipients, which excludes individuals with doctorates from foreign institutions and those above the age of 75. The Survey of Doctorate Recipients is a sample survey. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations. Data for doctorates conferred are presented by the location where the doctorate was earned; data for S&E doctorate holders are presented by employment location regardless of residence.

The indicator does not take into account the postgraduation mobility of recent S&E doctorate recipients to their place of employment. Graduate students with temporary visas may decide to return home after graduation to begin their careers. The indicator also does not take into account individuals with non-U.S. S&E doctorates who are working in the United States.

Table 8-41

S&E doctorates conferred per 1,000 employed S&E doctorate holders, by state: 1997, 2001, and 2006

State	S&E doctorates conferred			Employed S&E doctorate holders ^a			S&E doctorates conferred/1,000 employed S&E doctorate holders		
	1997	2001	2006	1997	2001	2006	1997	2001	2006
United States.....	25,948	24,466	29,015	516,560	572,800	618,370	50.2	42.7	46.9
Alabama.....	339	311	359	6,610	5,330	5,900	51.3	58.3	60.8
Alaska.....	18	25	18	1,110	1,200	1,110	16.2	20.8	16.2
Arizona.....	444	382	498	6,280	7,070	8,410	70.7	54.0	59.2
Arkansas.....	70	68	111	2,320	2,560	2,840	30.2	26.6	39.1
California.....	3,289	3,095	3,748	70,490	80,870	87,370	46.7	38.3	42.9
Colorado.....	546	479	473	10,740	11,780	13,150	50.8	40.7	36.0
Connecticut.....	362	339	438	8,770	9,490	10,330	41.3	35.7	42.4
Delaware.....	118	106	121	3,710	3,540	3,110	31.8	29.9	38.9
District of Columbia...	255	238	272	11,800	14,200	13,330	21.6	16.8	20.4
Florida.....	815	773	1,033	13,330	15,740	17,630	61.1	49.1	58.6
Georgia.....	555	604	771	9,880	11,990	12,940	56.2	50.4	59.6
Hawaii.....	108	91	86	2,550	2,580	2,850	42.4	35.3	30.2
Idaho.....	58	53	64	2,030	2,230	2,840	28.6	23.8	22.5
Illinois.....	1,276	1,238	1,372	21,260	22,110	24,110	60.0	56.0	56.9
Indiana.....	669	636	745	7,570	9,580	9,870	88.4	66.4	75.5
Iowa.....	409	366	418	4,120	4,390	4,890	99.3	83.4	85.5
Kansas.....	279	264	270	3,770	3,970	4,250	74.0	66.5	63.5
Kentucky.....	211	177	268	4,110	4,590	4,990	51.3	38.6	53.7
Louisiana.....	328	338	324	5,360	5,290	5,470	61.2	63.9	59.2
Maine.....	38	27	27	2,150	1,990	2,350	17.7	13.6	11.5
Maryland.....	714	707	876	21,020	22,730	26,220	34.0	31.1	33.4
Massachusetts.....	1,355	1,370	1,607	23,330	29,100	32,360	58.1	47.1	49.7
Michigan.....	943	881	1,040	15,050	17,380	17,900	62.7	50.7	58.1
Minnesota.....	485	466	557	9,810	11,410	11,850	49.4	40.8	47.0
Mississippi.....	145	133	187	3,000	3,170	3,310	48.3	42.0	56.5
Missouri.....	444	430	512	9,490	9,280	9,230	46.8	46.3	55.5
Montana.....	57	39	64	1,690	1,440	1,990	33.7	27.1	32.2
Nebraska.....	176	153	155	3,010	2,890	2,970	58.5	52.9	52.2
Nevada.....	44	49	95	1,620	2,030	2,620	27.2	24.1	36.3
New Hampshire.....	88	73	93	2,230	2,470	2,440	39.5	29.6	38.1
New Jersey.....	560	557	611	20,440	22,740	20,840	27.4	24.5	29.3
New Mexico.....	148	135	178	7,480	7,750	8,330	19.8	17.4	21.4
New York.....	2,160	1,985	2,350	40,080	43,980	45,840	53.9	45.1	51.3
North Carolina.....	719	722	886	13,730	16,760	18,880	52.4	43.1	46.9
North Dakota.....	51	41	50	1,350	1,080	1,380	37.8	38.0	36.2
Ohio.....	1,220	1,057	1,213	18,700	20,070	20,540	65.2	52.7	59.1
Oklahoma.....	221	224	220	4,580	4,360	4,420	48.3	51.4	49.8
Oregon.....	287	246	311	6,210	7,040	8,280	46.2	34.9	37.6
Pennsylvania.....	1,273	1,210	1,415	23,940	26,140	29,090	53.2	46.3	48.6
Rhode Island.....	148	139	205	2,450	2,640	3,020	60.4	52.7	67.9
South Carolina.....	231	238	257	4,780	5,130	5,920	48.3	46.4	43.4
South Dakota.....	37	33	36	1,060	1,000	1,050	34.9	33.0	34.3
Tennessee.....	395	374	428	8,520	8,980	9,980	46.4	41.6	42.9
Texas.....	1,620	1,575	1,924	28,570	32,490	35,970	56.7	48.5	53.5
Utah.....	275	243	240	4,800	4,820	5,540	57.3	50.4	43.3
Vermont.....	35	52	47	1,750	1,750	1,700	20.0	29.7	27.6
Virginia.....	615	571	705	15,250	17,460	19,790	40.3	32.7	35.6
Washington.....	474	454	545	13,360	14,760	16,920	35.5	30.8	32.2
West Virginia.....	79	66	112	1,980	1,890	2,020	39.9	34.9	55.4
Wisconsin.....	648	508	569	8,460	8,720	9,500	76.6	58.3	59.9
Wyoming.....	59	33	38	860	840	730	68.6	39.3	52.1
Puerto Rico.....	55	92	73	660	1,410	1,690	83.3	65.2	43.2

^aCoefficients of variation for estimates of employed S&E doctorate holders provided in appendix table 8-13.

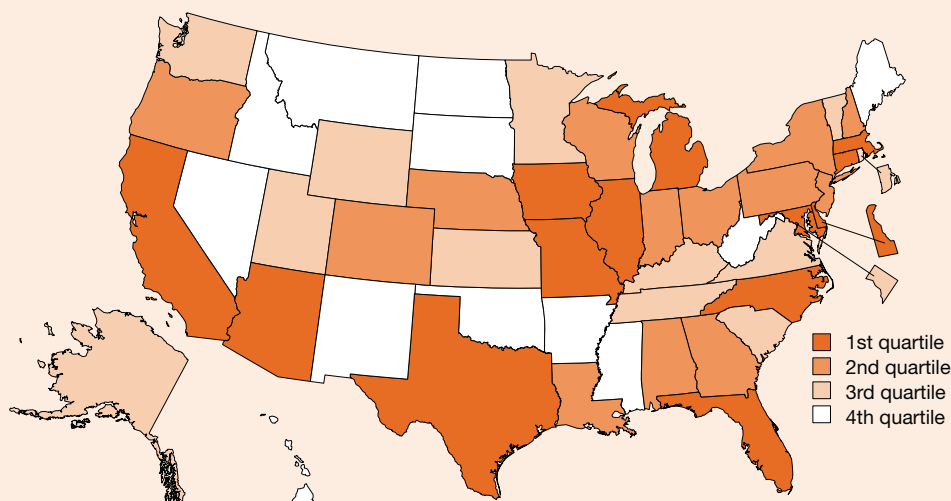
NOTE: Data on U.S. S&E doctorate holders classified by employment location.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates and Survey of Doctorate Recipients.

Academic S&E Article Output per 1,000 S&E Doctorate Holders in Academia

Figure 8-42

Academic S&E article output per 1,000 S&E doctorate holders in academia: 2008/06



1st quartile (723–592)	2nd quartile (589–505)	3rd quartile (501–427)	4th quartile (424–236)
Arizona California Connecticut Delaware † Florida Illinois Iowa Maryland Massachusetts Michigan Missouri North Carolina Texas	Alabama † Colorado Georgia Indiana Louisiana † Nebraska † New Hampshire † New Jersey New York Ohio Oregon Pennsylvania Wisconsin	Alaska † District of Columbia Kansas † Kentucky † Minnesota Rhode Island † South Carolina † Tennessee Utah Vermont † Virginia Washington Wyoming †	Arkansas † Hawaii † Idaho † Maine † Mississippi † Montana † Nevada † New Mexico † North Dakota † Oklahoma † South Dakota † West Virginia †

† EPSCoR state

SOURCES: Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/; The Patent Board™; and National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients. See table 8-42.

Findings

- During the decade beginning in 1997, the number of scientific and technical articles published and number of S&E doctorate holders increased proportionally, resulting in no significant change in the nationwide value of this indicator.
- The publication rate for academic S&E doctorate holders in states in the top quartile of this indicator was nearly twice as high as for states in the bottom quartile.
- In the most recent data, the states with the highest values for this indicator were distributed across the nation.
- The average indicator value for EPSCoR states was considerably lower than the average indicator value for non-EPSCoR states.

The volume of peer-reviewed articles per 1,000 academic S&E doctorate holders is an approximate measure of their contribution to scientific knowledge. Publications are only one measure of academic productivity, which includes trained personnel, patents, and other outputs. A high value on this indicator shows that the S&E faculty in a state's academic institutions are generating a high volume of publications relative to other states. Academic institutions include 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. Research is more central to the mission of some of these institutions than others.

Publication counts are based on the number of articles that appear in a set of journals tracked by Thomson Scientific in the Science Citation Index and Social Sciences Citation Index. Academic article output is based on the most recent journal set; data for earlier years may differ slightly from previous publications due to changes in the journal set. Articles with authors from different institutions were counted fractionally. For instance, for a publication with authors at N institutions, each institution would be credited with $1/N$ of the article.

S&E doctorates include those in computer sciences; mathematics; the biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data derive from the National Science Foundation's Survey of Doctorate Recipients, which excludes those with doctorates from foreign institutions and those above the age of 75. The Survey of Doctorate Recipients is a sample survey. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders in academia are presented by employment location regardless of residence.

Table 8-42

Academic S&E article output per 1,000 S&E doctorate holders in academia, by state: 1997, 2003, and 2008/06

State	Academic S&E article output			S&E doctorate holders in academia ^a			Academic articles/ 1,000 academic doctorate holders		
	1997	2003	2008	1997	2003	2006	1997	2003	2008/06
EPSCoR states.....	16,096	17,479	19,506	41,750	42,890	44,410	386	408	439
Non-EPSCoR states.....	120,252	129,972	146,975	201,710	232,390	243,740	596	559	603
Average EPSCoR state value	na	na	na	na	na	na	372	394	430
Average non-EPSCoR state value	na	na	na	na	na	na	585	546	582
United States.....	137,598	148,722	167,852	245,670	277,970	290,730	560	535	577
Alabama.....	1,838	1,851	1,974	4,640	3,240	3,430	396	571	576
Alaska.....	160	195	285	450	600	580	356	325	492
Arizona.....	2,133	2,152	2,455	3,050	3,660	4,010	699	588	612
Arkansas.....	575	664	716	1,520	1,850	1,940	379	359	369
California.....	16,862	18,744	21,001	26,050	29,830	29,070	647	628	722
Colorado.....	2,408	2,615	2,855	4,550	5,320	5,540	529	492	515
Connecticut.....	2,692	2,748	3,070	4,000	4,490	4,770	673	612	644
Delaware.....	476	580	650	750	800	950	635	725	684
District of Columbia.....	1,083	1,061	1,106	2,210	2,690	2,580	490	394	429
Florida.....	3,976	4,551	5,678	6,850	8,710	9,590	580	523	592
Georgia.....	3,076	3,640	4,299	5,780	7,240	7,750	532	503	555
Hawaii.....	531	572	697	1,380	1,910	1,670	385	299	417
Idaho.....	287	305	360	780	1,190	1,490	368	257	242
Illinois.....	6,469	6,959	7,662	10,620	10,930	11,860	609	637	646
Indiana.....	2,862	3,022	3,645	4,680	5,810	6,190	612	520	589
Iowa.....	2,130	2,220	2,232	3,100	3,390	3,530	687	655	632
Kansas.....	1,134	1,235	1,292	2,260	2,380	2,600	502	519	497
Kentucky.....	1,320	1,434	1,604	3,040	3,320	3,610	434	432	444
Louisiana.....	1,810	1,759	1,753	3,580	3,570	3,470	506	493	505
Maine.....	238	267	285	1,340	1,150	1,210	178	233	236
Maryland.....	4,259	4,946	5,453	6,400	7,060	7,590	666	700	718
Massachusetts.....	8,762	9,445	10,834	11,810	14,630	14,980	742	646	723
Michigan.....	4,620	5,071	5,804	7,850	9,050	9,410	589	560	617
Minnesota.....	2,300	2,287	2,634	4,490	5,600	5,730	512	408	460
Mississippi.....	583	710	840	1,940	2,060	2,020	301	345	416
Missouri.....	3,032	3,122	3,443	5,770	5,770	5,750	526	541	599
Montana.....	256	363	396	1,020	1,090	1,230	251	333	322
Nebraska.....	983	991	1,115	2,360	1,880	1,900	417	527	587
Nevada.....	352	458	571	980	1,260	1,620	359	364	352
New Hampshire.....	579	627	683	1,130	1,360	1,270	512	461	538
New Jersey.....	2,952	3,150	3,326	5,290	6,160	6,500	558	511	512
New Mexico.....	782	792	835	2,450	2,960	2,220	319	268	376
New York.....	11,781	12,179	13,378	20,900	22,360	23,110	564	545	579
North Carolina.....	4,762	5,321	6,170	7,740	9,650	10,310	615	551	598
North Dakota.....	262	315	411	900	740	970	292	426	424
Ohio.....	4,900	5,088	5,635	9,750	10,620	10,620	503	479	531
Oklahoma.....	853	933	1,081	2,680	2,900	2,890	318	322	374
Oregon.....	1,550	1,648	1,972	2,690	3,690	3,620	576	447	545
Pennsylvania.....	7,756	8,260	9,419	12,150	15,650	16,210	638	528	581
Rhode Island.....	828	871	1,020	1,730	2,180	2,040	479	399	500
South Carolina.....	1,155	1,428	1,587	3,230	3,000	3,720	358	476	427
South Dakota.....	136	165	202	700	670	690	194	246	293
Tennessee.....	2,123	2,310	2,826	4,720	5,210	5,640	450	443	501
Texas.....	8,415	9,423	10,755	13,760	15,240	17,170	612	618	626
Utah.....	1,492	1,538	1,786	3,080	2,770	3,580	485	555	499
Vermont.....	369	383	475	1,140	1,100	1,050	324	349	453
Virginia.....	2,822	2,991	3,593	5,830	7,630	8,050	484	392	446
Washington.....	3,091	3,412	3,605	5,410	6,740	7,190	571	506	501
West Virginia.....	400	375	417	1,190	1,190	1,320	336	315	316
Wisconsin.....	3,025	3,129	3,445	5,390	5,180	5,970	561	604	577
Wyoming.....	189	204	255	560	490	520	337	417	490
Puerto Rico.....	167	212	265	640	1,360	1,270	261	156	209

na = not applicable

EPSCoR = Experimental Program to Stimulate Competitive Research

^aCoefficients of variation for estimates of S&E doctorate holders in academia presented in appendix table 8-14.

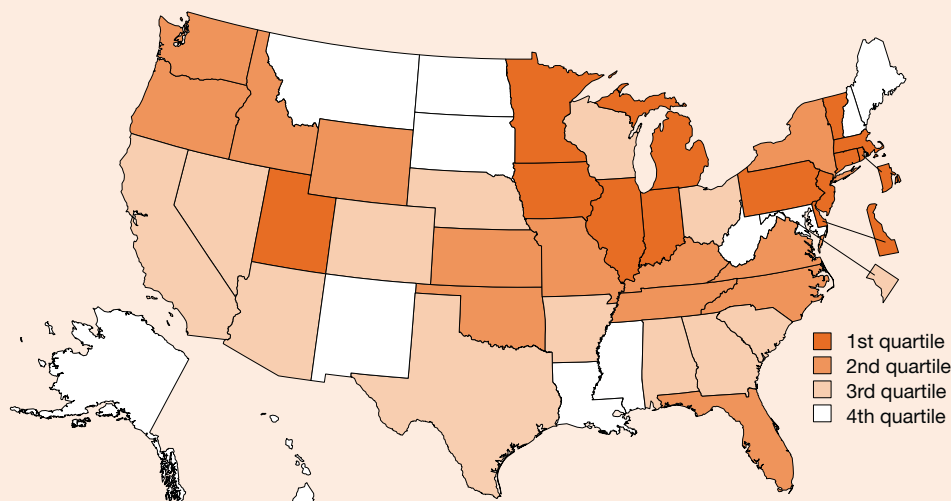
NOTES: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction. Workforce represents employed component of civilian labor force and reported as annual data not seasonally adjusted. Most recent indicator values calculated using doctorate holder data for 2006 and publication data for 2008.

SOURCES: Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/; The Patent Board™; and National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients.

Academic S&E Article Output per \$1 Million of Academic R&D

Figure 8-43

Academic S&E article output per \$1 million of academic R&D: 2008



1st quartile (4.88–3.62)	2nd quartile (3.59–3.11)	3rd quartile (3.09–2.75)	4th quartile (2.66–1.98)
Connecticut Delaware † Illinois Indiana Iowa Massachusetts Michigan Minnesota New Jersey Pennsylvania Rhode Island † Utah Vermont †	Florida Idaho † Kansas † Kentucky † Missouri New York North Carolina Oklahoma † Oregon Tennessee Virginia Washington Wyoming †	Alabama † Arizona Arkansas † California Colorado District of Columbia Georgia Nebraska † Nevada † Ohio South Carolina † Texas Wisconsin	Alaska † Hawaii † Louisiana † Maine † Maryland Mississippi † Montana † New Hampshire † New Mexico † North Dakota † South Dakota † West Virginia †

† EPSCoR state

SOURCES: Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/; The Patent Board™; and National Science Foundation, Division of Science Resources Statistics, Academic Research and Development Expenditures. See table 8-43.

Findings

- From 1998 to 2008, the number of academic S&E publications rose from about 138,000 to about 168,000—an increase of 22% that may reflect both an increase in publications and an increase in the size of the journal set.
- In 2008, academic researchers produced an average of 3.2 publications per \$1 million of academic R&D, compared with 5.4 in 1998. This partly reflects the effect of general price inflation but may also indicate rising academic research costs.
- Between 1998 and 2008, the value for this indicator decreased in all states but one and by 40% nationwide.
- EPSCoR states tended to cluster in the lower quartiles for this indicator.

This indicator shows the relationship between the number of academic S&E publications and expenditures for academic R&D. A high value for this indicator means that the S&E publications output of a state's academic institutions is high relative to their R&D spending. Academic institutions include 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. This indicator is not an efficiency measure; it is affected by the highly variable costs of R&D and by publishing conventions in different fields and institutions. It may also reflect variations in field emphasis among states and institutions.

Publication counts are based on the number of articles that appear in a set of journals tracked by Thomson Scientific in the Science Citation Index and Social Sciences Citation Index. Academic article output is based on the most recent journal set; data for earlier years may differ slightly from previous publications due to changes in the journal set. Articles with authors from different institutions were counted fractionally. For instance, for a publication with authors at N institutions, each institution would be credited with $1/N$ of the article.

In this indicator, Maryland data exclude expenditures by the Applied Physics Laboratory (APL) at the Johns Hopkins University. APL employs more than 3,000 workers and supports the Department of Defense, the National Aeronautics and Space Administration, and other government agencies. It does not focus on academic research.

Table 8-43

Academic S&E article output per \$1 million of academic R&D, by state: 1998, 2003, and 2008

State	Academic S&E article output			Academic R&D (current \$millions)			Academic articles/ \$1 million academic R&D		
	1998	2003	2008	1998	2003	2008	1998	2003	2008
United States.....	138,147	148,722	167,852	25,772	39,999	51,784	5.36	3.72	3.24
Alabama.....	1,829	1,851	1,974	442	551	708	4.14	3.36	2.79
Alaska.....	157	195	285	76	142	111	2.05	1.37	2.56
Arizona.....	1,960	2,152	2,455	406	618	831	4.83	3.48	2.95
Arkansas.....	568	664	716	117	184	247	4.85	3.61	2.90
California.....	17,056	18,744	21,001	3,392	5,358	7,026	5.03	3.50	2.99
Colorado.....	2,467	2,615	2,855	489	695	924	5.04	3.76	3.09
Connecticut.....	2,793	2,748	3,070	407	595	732	6.87	4.62	4.20
Delaware.....	499	580	650	73	105	133	6.86	5.54	4.88
District of Columbia...	1,089	1,061	1,106	233	281	369	4.68	3.78	3.00
Florida.....	4,085	4,551	5,678	713	1,205	1,592	5.73	3.78	3.57
Georgia.....	3,061	3,640	4,299	804	1,177	1,521	3.81	3.09	2.83
Hawaii.....	511	572	697	148	185	279	3.45	3.10	2.50
Idaho.....	273	305	360	72	105	113	3.77	2.91	3.17
Illinois.....	6,399	6,959	7,662	1,031	1,614	1,973	6.21	4.31	3.88
Indiana.....	2,884	3,022	3,645	426	726	954	6.77	4.16	3.82
Iowa.....	2,147	2,220	2,232	359	499	528	5.99	4.45	4.23
Kansas.....	1,117	1,235	1,292	213	310	404	5.24	3.98	3.20
Kentucky.....	1,245	1,434	1,604	242	378	506	5.16	3.80	3.17
Louisiana.....	1,794	1,759	1,753	354	514	660	5.07	3.42	2.66
Maine.....	242	267	285	35	84	128	6.87	3.19	2.23
Maryland.....	4,412	4,946	5,453	1,330	2,041	2,747	3.32	2.42	1.98
Massachusetts.....	8,722	9,445	10,834	1,348	1,822	2,272	6.47	5.18	4.77
Michigan.....	4,610	5,071	5,804	883	1,390	1,594	5.22	3.65	3.64
Minnesota.....	2,279	2,287	2,634	368	518	699	6.20	4.42	3.77
Mississippi.....	613	710	840	153	324	406	4.01	2.19	2.07
Missouri.....	3,037	3,122	3,443	485	807	960	6.27	3.87	3.59
Montana.....	299	363	396	77	141	186	3.91	2.57	2.13
Nebraska.....	1,002	991	1,115	186	301	376	5.38	3.30	2.96
Nevada.....	358	458	571	84	155	191	4.27	2.97	2.99
New Hampshire.....	594	627	683	117	252	302	5.07	2.49	2.26
New Jersey.....	2,813	3,150	3,326	485	754	877	5.80	4.17	3.79
New Mexico.....	724	792	835	229	307	417	3.17	2.58	2.00
New York.....	11,977	12,179	13,378	1,930	3,078	4,045	6.21	3.96	3.31
North Carolina.....	4,803	5,321	6,170	900	1,398	1,981	5.34	3.81	3.11
North Dakota.....	263	315	411	57	134	181	4.62	2.36	2.28
Ohio.....	4,902	5,088	5,635	810	1,268	1,827	6.05	4.01	3.08
Oklahoma.....	871	933	1,081	209	295	333	4.17	3.16	3.24
Oregon.....	1,531	1,648	1,972	314	437	595	4.87	3.77	3.31
Pennsylvania.....	7,839	8,260	9,419	1,349	2,015	2,604	5.81	4.10	3.62
Rhode Island.....	814	871	1,020	112	187	237	7.27	4.65	4.31
South Carolina.....	1,170	1,428	1,587	248	435	576	4.71	3.28	2.75
South Dakota.....	127	165	202	25	50	92	5.00	3.30	2.20
Tennessee.....	2,176	2,310	2,826	347	600	787	6.28	3.85	3.59
Texas.....	8,388	9,423	10,755	1,697	2,765	3,744	4.94	3.41	2.87
Utah.....	1,511	1,538	1,786	249	385	426	6.07	3.99	4.20
Vermont.....	359	383	475	59	107	117	6.13	3.60	4.06
Virginia.....	2,891	2,991	3,593	497	776	1,053	5.81	3.85	3.41
Washington.....	3,049	3,412	3,605	543	871	1,058	5.61	3.92	3.41
West Virginia.....	396	375	417	64	125	171	6.17	2.99	2.44
Wisconsin.....	3,059	3,129	3,445	536	878	1,117	5.71	3.56	3.08
Wyoming.....	192	204	255	49	60	75	3.95	3.40	3.41
Puerto Rico.....	189	212	265	88	78	100	2.16	2.70	2.64

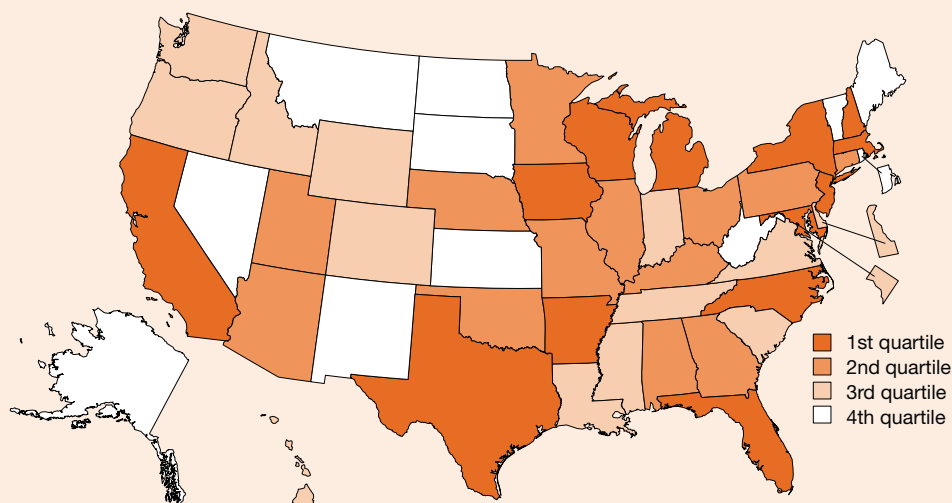
NA = not available

SOURCES: Thomson Reuters, Science Citation Index and Social Sciences Citation Index, http://thomsonreuters.com/products_services/science/; The Patent Board™; and National Science Foundation, Division of Science Resources Statistics, Academic Research and Development Expenditures (various years).

Academic Patents Awarded per 1,000 S&E Doctorate Holders in Academia

Figure 8-44

Academic patents awarded per 1,000 S&E doctorate holders in academia: 2006



1st quartile (24.7–11.1)	2nd quartile (10.8–7.3)	3rd quartile (6.9–5.2)	4th quartile (4.9–0.0)
Arkansas † California Florida Iowa Maryland Massachusetts Michigan New Hampshire † New Jersey New York North Carolina Texas Wisconsin	Alabama † Arizona Connecticut Georgia Illinois Kentucky † Minnesota Missouri Nebraska † Ohio Oklahoma † Pennsylvania Utah	Colorado Delaware † District of Columbia Hawaii † Idaho † Indiana Louisiana † Mississippi † Oregon South Carolina † Tennessee Virginia Washington Wyoming †	Alaska † Kansas † Maine † Montana † Nevada † New Mexico † North Dakota † Rhode Island † South Dakota † Vermont † West Virginia †

† EPSCoR state

SOURCES: Patent and Trademark Office, Technology Assessment and Forecast Branch, U.S. Colleges and Universities-Utility Patent Grants; and National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients. See table 8-44.

Findings

- Throughout the United States, the number of patents awarded to academic institutions increased from about 2,500 in 1997 to about 3,400 in 2006, an increase of 36%; the number of academic S&E doctorate holders rose by 18% during the same period.
- In 2006, 11.6 academic patents were produced nationally for each 1,000 S&E doctorate holders employed in academia, slightly higher than the 10.1 patents produced in 1997.
- In 2006, states varied widely on this indicator, with values ranging from 0 to 24.7 patents per 1,000 S&E doctorate holders employed in academia, indicating a difference in patenting philosophy or mix of industries with which these academic institutions deal.
- California showed the highest level of both academic patenting and venture capital investment.

Since the early 1980s, academic institutions have increasingly been viewed as engines of economic growth. Growing attention has been paid to the role of academic R&D in creating new products, processes, and services. One indicator of such R&D results is the volume of academic patents awarded. Academic patenting is highly concentrated and partly reflects the resources devoted to institutional patenting offices.

This indicator is an approximate measure of the degree to which results with perceived economic value are generated by the doctoral academic workforce. Academia includes 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. Utility patents—commonly known as patents for inventions—include any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound, and represent a key measure of intellectual property.

S&E doctorates include those in computer sciences; mathematics; biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. S&E doctorate data derive from the National Science Foundation's Survey of Doctorate Recipients, which excludes those with doctorates from foreign institutions and those above the age of 75. The Survey of Doctorate Recipients is a sample survey. Estimates for states with smaller populations are generally less precise than estimates for states with larger populations. Data for S&E doctorate holders are presented by employment location regardless of residence.

Table 8-44

Academic patents awarded per 1,000 S&E doctorate holders in academia, by state: 1997, 2001, and 2006

State	Patents awarded to academic institutions			S&E doctorate holders in academia ^a			Academic patents/1,000 academic S&E doctorate holders		
	1997	2001	2006	1997	2001	2006	1997	2001	2006
United States.....	2,482	3,282	3,382	245,670	261,780	290,730	10.1	12.5	11.6
Alabama.....	23	40	27	4,640	3,050	3,430	5.0	13.1	7.9
Alaska.....	2	0	0	450	530	580	4.4	0.0	0.0
Arizona.....	21	17	34	3,050	3,340	4,010	6.9	5.1	8.5
Arkansas.....	8	28	25	1,520	1,640	1,940	5.3	17.1	12.9
California.....	436	693	719	26,050	26,790	29,070	16.7	25.9	24.7
Colorado.....	32	31	29	4,550	5,120	5,540	7.0	6.1	5.2
Connecticut.....	34	37	51	4,000	4,420	4,770	8.5	8.4	10.7
Delaware.....	4	5	5	750	840	950	5.3	6.0	5.3
District of Columbia ...	28	13	15	2,210	2,840	2,580	12.7	4.6	5.8
Florida.....	96	106	171	6,850	8,250	9,590	14.0	12.8	17.8
Georgia.....	45	75	80	5,780	6,450	7,750	7.8	11.6	10.3
Hawaii.....	6	4	10	1,380	1,570	1,670	4.3	2.5	6.0
Idaho.....	6	6	10	780	980	1,490	7.7	6.1	6.7
Illinois.....	81	109	122	10,620	11,090	11,860	7.6	9.8	10.3
Indiana.....	39	17	32	4,680	5,710	6,190	8.3	3.0	5.2
Iowa.....	51	67	52	3,100	3,220	3,530	16.5	20.8	14.7
Kansas.....	7	18	4	2,260	2,270	2,600	3.1	7.9	1.5
Kentucky.....	16	20	28	3,040	3,240	3,610	5.3	6.2	7.8
Louisiana.....	26	42	23	3,580	3,470	3,470	7.3	12.1	6.6
Maine.....	0	2	5	1,340	1,200	1,210	0.0	1.7	4.1
Maryland.....	66	114	136	6,400	6,100	7,590	10.3	18.7	17.9
Massachusetts.....	188	218	234	11,810	13,390	14,980	15.9	16.3	15.6
Michigan.....	104	105	120	7,850	8,820	9,410	13.2	11.9	12.8
Minnesota.....	50	65	62	4,490	5,540	5,730	11.1	11.7	10.8
Mississippi.....	6	12	14	1,940	2,000	2,020	3.1	6.0	6.9
Missouri.....	40	55	42	5,770	5,710	5,750	6.9	9.6	7.3
Montana.....	4	4	6	1,020	810	1,230	3.9	4.9	4.9
Nebraska.....	27	21	19	2,360	1,960	1,900	11.4	10.7	10.0
Nevada.....	2	4	4	980	1,260	1,620	2.0	3.2	2.5
New Hampshire.....	3	10	18	1,130	1,240	1,270	2.7	8.1	14.2
New Jersey.....	52	81	80	5,290	5,860	6,500	9.8	13.8	12.3
New Mexico.....	19	17	9	2,450	2,910	2,220	7.8	5.8	4.1
New York.....	224	282	284	20,900	21,770	23,110	10.7	13.0	12.3
North Carolina.....	96	148	131	7,740	9,050	10,310	12.4	16.4	12.7
North Dakota.....	5	4	4	900	660	970	5.6	6.1	4.1
Ohio.....	75	93	86	9,750	9,920	10,620	7.7	9.4	8.1
Oklahoma.....	17	22	27	2,680	2,800	2,890	6.3	7.9	9.3
Oregon.....	27	23	20	2,690	3,250	3,620	10.0	7.1	5.5
Pennsylvania.....	138	213	147	12,150	13,590	16,210	11.4	15.7	9.1
Rhode Island.....	9	19	9	1,730	1,730	2,040	5.2	11.0	4.4
South Carolina.....	14	14	22	3,230	3,030	3,720	4.3	4.6	5.9
South Dakota.....	2	2	2	700	640	690	2.9	3.1	2.9
Tennessee.....	25	42	37	4,720	4,800	5,640	5.3	8.8	6.6
Texas.....	125	155	191	13,760	14,270	17,170	9.1	10.9	11.1
Utah.....	38	48	35	3,080	3,100	3,580	12.3	15.5	9.8
Vermont.....	3	3	4	1,140	1,050	1,050	2.6	2.9	3.8
Virginia.....	49	41	48	5,830	7,180	8,050	8.4	5.7	6.0
Washington.....	42	56	42	5,410	6,390	7,190	7.8	8.8	5.8
West Virginia.....	2	4	2	1,190	1,150	1,320	1.7	3.5	1.5
Wisconsin.....	65	74	102	5,390	5,210	5,970	12.1	14.2	17.1
Wyoming.....	4	3	3	560	570	520	7.1	5.3	5.8
Puerto Rico.....	0	5	2	640	1,070	1,270	0.0	4.7	1.6

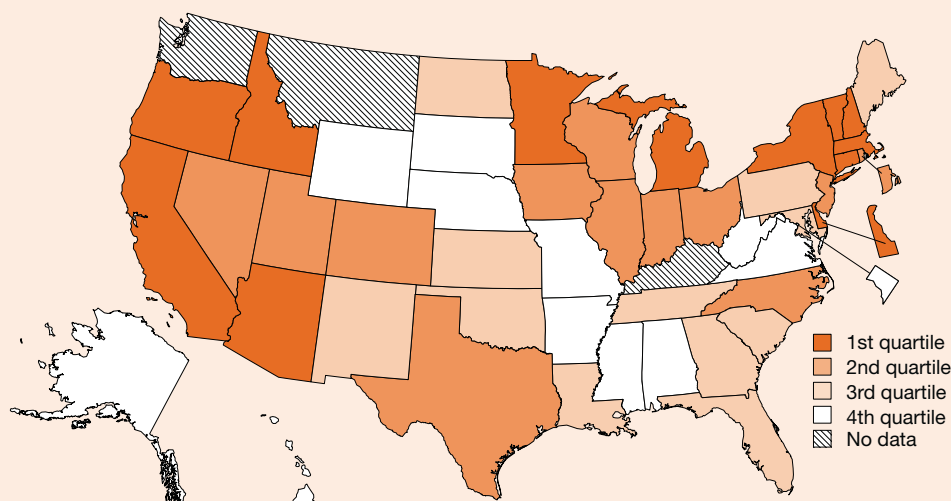
^aCoefficients of variation for estimates of S&E doctorate holders in academia presented in appendix table 8-14.

SOURCES: Patent and Trademark Office, Technology Assessment and Forecast Branch, U.S. Colleges and Universities—Utility Patent Grants, Calendar Years 1969–2006; and National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients.

Patents Awarded per 1,000 Individuals in S&E Occupations

Figure 8-45

Patents awarded per 1,000 individuals in S&E occupations, by state: 2008



1st quartile (49.8–14.6)	2nd quartile (13.7–10.8)	3rd quartile (10.6–6.2)	4th quartile (6.0–1.1)	No data
Arizona California Connecticut Delaware † Idaho † Massachusetts Michigan Minnesota New Hampshire † New York Oregon Vermont †	Colorado Illinois Indiana Iowa Nevada † New Jersey North Carolina Ohio Rhode Island † Texas Utah Wisconsin	Florida Georgia Kansas † Louisiana † Maine † Maryland New Mexico † North Dakota † Oklahoma † Pennsylvania South Carolina † Tennessee	Alabama † Alaska † Arkansas † District of Columbia Hawaii † Mississippi † Missouri Nebraska † South Dakota † Virginia West Virginia † Wyoming †	Kentucky † Montana † Washington

† EPSCoR state

SOURCES: Patent and Trademark Office, Electronic Information Products Division/Patent Technology Monitoring Branch, Patent Counts by Country/State and Year, All Patents, All Types; and Bureau of Labor Statistics, Occupational Employment and Wage Estimates. See table 8-45.

Findings

- In 2008, about 77,000 utility patents were awarded to inventors residing in the United States, a decline from the 84,000 utility patents awarded in 2004.
- In 2008, the national average for this indicator was 13.4 patents, which was lower than the average of 16.6 in 2004. This decline may have been due to fewer patent applications being filed, a reduced capacity of USPTO to process applications and award patents, and/or an increase in the number of individuals working in S&E occupations.
- Idaho typically reports the highest values for this indicator, reflecting the presence of the Department of Energy's high-patenting Idaho National Laboratory. Values for the remaining states ranged from 35.4 to 1.5.
- Nearly 25% of all 2008 U.S. utility patents were awarded to residents of California.

This indicator shows state patent activity normalized to the number of employees in S&E occupations. People in S&E occupations include computer, mathematical, life, physical, and social scientists; engineers; and postsecondary teachers in any of these fields. Managers, elementary and secondary schoolteachers, and medical personnel are excluded.

This indicator includes only utility patents, commonly known as patents for inventions. Utility patents can be granted for any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound and represent a key measure of intellectual property.

USPTO classifies patents geographically according to residence of the first-named inventor. Only U.S.-origin patents are included. State data on individuals in S&E occupations come from the Occupational Employment Statistics (OES) survey, which surveys states' workplaces and assigns workers to a state based on where they work.

Situations in which workers live in one state and work in another introduce some imprecision into the calculation of this indicator. The treatment of postsecondary teachers is another source of imprecision. Because OES data do not classify postsecondary teachers by field, faculty teaching in S&E fields are not counted as working in S&E occupations. Estimates for jurisdictions with smaller populations are generally less precise than estimates for jurisdictions with larger populations.

Table 8-45

Patents awarded per 1,000 individuals in S&E occupations, by state: 2004, 2006, and 2008

State	Patents awarded			Individuals in S&E occupations			Patents/1,000 individuals in S&E occupations		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
United States.....	84,249	89,795	77,479	5,085,740	5,407,710	5,781,460	16.6	16.6	13.4
Alabama.....	375	357	279	57,560	66,100	68,580	6.5	5.4	4.1
Alaska.....	39	36	20	10,660	10,720	13,260	3.7	3.4	1.5
Arizona.....	1,621	1,705	1,584	95,380	98,110	102,100	17.0	17.4	15.5
Arkansas.....	132	138	108	22,150	24,860	29,310	6.0	5.6	3.7
California.....	19,488	22,275	19,181	693,670	730,010	791,750	28.1	30.5	24.2
Colorado.....	2,099	2,118	1,622	126,280	133,730	147,000	16.6	15.8	11.0
Connecticut.....	1,577	1,652	1,356	82,820	79,380	80,290	19.0	20.8	16.9
Delaware.....	342	357	325	17,980	21,550	22,330	19.0	16.6	14.6
District of Columbia...	75	63	68	57,750	64,120	63,360	1.3	1.0	1.1
Florida.....	2,456	2,600	2,046	229,950	246,190	248,200	10.7	10.6	8.2
Georgia.....	1,326	1,487	1,344	141,710	136,470	147,380	9.4	10.9	9.1
Hawaii.....	76	84	77	16,360	18,940	18,830	4.6	4.4	4.1
Idaho.....	1,785	1,663	1,162	22,310	NA	23,310	80.0	NA	49.8
Illinois.....	3,162	3,294	2,741	219,530	222,470	224,370	14.4	14.8	12.2
Indiana.....	1,280	1,165	985	79,120	80,110	90,840	16.2	14.5	10.8
Iowa.....	658	666	561	39,280	43,670	46,180	16.8	15.3	12.1
Kansas.....	448	492	425	52,020	48,620	54,260	8.6	10.1	7.8
Kentucky.....	407	413	413	44,350	44,680	NA	9.2	9.2	NA
Louisiana.....	343	321	260	42,230	40,180	41,790	8.1	8.0	6.2
Maine.....	134	142	113	15,160	15,950	17,000	8.8	8.9	6.6
Maryland.....	1,313	1,410	1,232	154,310	159,470	167,070	8.5	8.8	7.4
Massachusetts.....	3,672	4,011	3,516	186,260	198,670	217,310	19.7	20.2	16.2
Michigan.....	3,756	3,758	2,996	183,140	208,520	204,290	20.5	18.0	14.7
Minnesota.....	2,754	2,957	2,535	119,380	125,930	134,440	23.1	23.5	18.9
Mississippi.....	136	119	102	23,190	24,910	27,270	5.9	4.8	3.7
Missouri.....	768	721	615	87,200	96,420	105,390	8.8	7.5	5.8
Montana.....	119	121	91	11,390	13,010	NA	10.4	9.3	NA
Nebraska.....	191	186	191	31,720	32,500	31,820	6.0	5.7	6.0
Nevada.....	410	386	375	23,980	26,930	27,300	17.1	14.3	13.7
New Hampshire.....	626	602	477	24,350	27,680	29,150	25.7	21.7	16.4
New Jersey.....	2,957	3,172	2,722	165,150	176,460	198,060	17.9	18.0	13.7
New Mexico.....	370	344	280	33,500	30,800	34,560	11.0	11.2	8.1
New York.....	5,846	5,627	4,885	272,930	306,810	326,510	21.4	18.3	15.0
North Carolina.....	1,794	1,974	1,841	135,380	138,790	153,680	13.3	14.2	12.0
North Dakota.....	53	66	63	8,420	9,360	9,450	6.3	7.1	6.7
Ohio.....	2,889	2,630	2,227	180,360	185,190	206,320	16.0	14.2	10.8
Oklahoma.....	447	544	417	NA	50,770	48,900	NA	10.7	8.5
Oregon.....	1,725	2,060	1,781	62,570	64,520	70,070	27.6	31.9	25.4
Pennsylvania.....	2,883	2,842	2,414	195,730	214,910	227,170	14.7	13.2	10.6
Rhode Island.....	309	269	218	19,660	18,060	18,090	15.7	14.9	12.1
South Carolina.....	524	577	395	51,030	53,230	57,770	10.3	10.8	6.8
South Dakota.....	82	74	54	9,420	10,120	11,870	8.7	7.3	4.5
Tennessee.....	681	669	586	65,120	67,040	72,760	10.5	10.0	8.1
Texas.....	5,930	6,308	5,712	383,180	408,710	463,850	15.5	15.4	12.3
Utah.....	683	684	642	43,030	49,690	52,570	15.9	13.8	12.2
Vermont.....	400	437	437	11,770	12,780	12,360	34.0	34.2	35.4
Virginia.....	1,077	1,094	1,030	220,180	251,720	259,280	4.9	4.3	4.0
Washington.....	2,221	3,286	3,517	154,610	171,780	NA	14.4	19.1	NA
West Virginia.....	100	103	74	16,100	17,150	17,000	6.2	6.0	4.4
Wisconsin.....	1,658	1,688	1,349	95,230	96,860	101,680	17.4	17.4	13.3
Wyoming.....	52	48	35	6,760	7,640	8,850	7.7	6.3	4.0
Puerto Rico.....	19	25	NA	20,410	23,850	22,970	0.9	1.0	NA

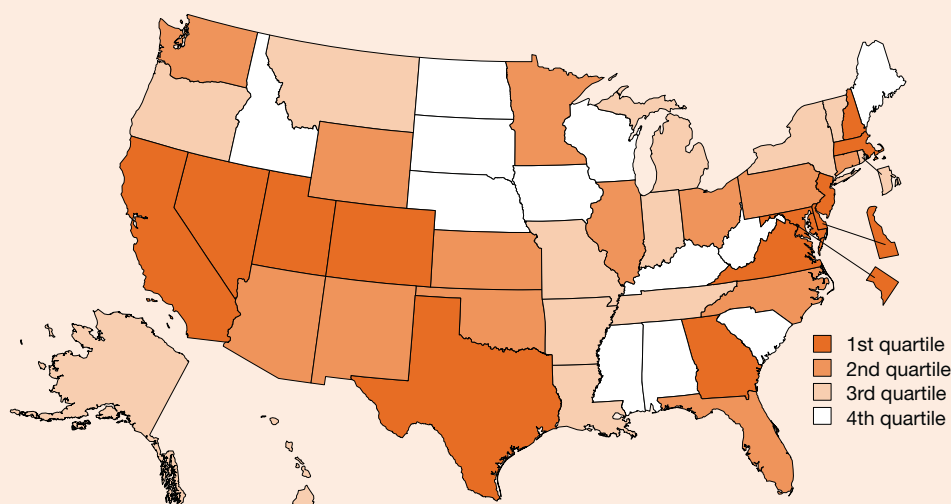
NA = not available

NOTES: Origin of utility patent determined by residence of first-named inventor. National total for S&E occupations in the United States provided by Occupational Employment Statistics (OES). OES estimates for 2004, 2006, and 2008 S&E occupations based on May data.

SOURCES: Patent and Trademark Office, Electronic Information Products Division/Patent Technology Monitoring Branch, Patent Counts by Country/State and Year, Utility Patents, January 1, 1963–December 31, 2008; and Bureau of Labor Statistics, Occupational Employment and Wage Estimates.

High-Technology Share of All Business Establishments

Figure 8-46
High-technology share of all business establishments: 2006



1st quartile (14.60%–9.05%)	2nd quartile (8.99%–7.55%)	3rd quartile (7.53%–6.51%)	4th quartile (6.48%–4.86%)
California Colorado Delaware † District of Columbia Georgia Maryland Massachusetts Nevada † New Hampshire † New Jersey Texas Utah Virginia	Arizona Connecticut Florida Illinois Kansas † Minnesota New Mexico † North Carolina Ohio Oklahoma † Pennsylvania Washington Wyoming †	Alaska † Arkansas † Hawaii † Indiana Louisiana † Michigan Missouri Montana † New York Oregon Rhode Island † Tennessee Vermont †	Alabama † Idaho † Iowa Kentucky † Maine † Mississippi † Nebraska † North Dakota † South Carolina † South Dakota † West Virginia † Wisconsin

† EPSCoR state

SOURCE: Census Bureau, 1989–2004 Business Information Tracking Series, special tabulations. See table 8-46.

Findings

- The number of establishments in high-technology industries rose from about 590,000 in 2003 to about 634,000 in 2006, an increase of 43,000, or 7%.
- The percentage of U.S. establishments in high-technology industries grew from 8.17% to 8.35% of the total business establishments during the 2003–06 period, and most states showed an increase in the percentage of their establishments in high-technology industries.
- Between 2003 and 2006, the largest growth in the number of establishments in high-technology industries occurred in California and Florida, which added 7,900 and 5,560 establishments, respectively.
- The state distribution of this indicator is similar to that of three other indicators: bachelor's degree holders, S&E doctoral degree holders, and S&E occupations, all expressed as a share of the workforce.
- EPSCoR states tended to cluster in the lower quartiles and exhibited a lower group average, indicating that these states had a business mix with a smaller percentage of establishments in high-technology industries.

This indicator measures the portion of a state's business establishments that are classified as being part of high-technology industries. High-technology industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries. States often consider such industries desirable, in part because they tend to compensate workers better than other industries do. This indicator does not take into account establishment size. Each establishment with an employer identification number is counted without regard to the number of its employees.

The data pertaining to establishments for 2003, 2004, and 2006 are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data for earlier years are not directly comparable.

Table 8-46

High-technology share of all business establishments, by state: 2003, 2004, and 2006

State	High-technology establishments			All business establishments			High-technology/business establishments (%)		
	2003	2004	2006	2003	2004	2006	2003	2004	2006
EPSCoR states.....	83,464	84,985	88,790	1,202,246	1,224,016	1,255,900	6.94	6.94	7.07
Non-EPSCoR states.....	504,364	515,962	541,875	6,001,637	6,123,459	6,308,168	8.40	8.43	8.59
Average EPSCoR state value	na	na	na	na	na	na	7.08	7.07	7.17
Average non-EPSCoR state value	na	na	na	na	na	na	8.23	8.25	8.40
United States.....	590,417	603,642	633,727	7,223,240	7,366,978	7,585,035	8.17	8.19	8.35
Alabama.....	6,347	6,407	6,613	99,453	100,521	103,236	6.38	6.37	6.41
Alaska.....	1,345	1,358	1,494	19,037	19,309	19,838	7.07	7.03	7.53
Arizona.....	10,433	10,901	11,942	120,966	125,330	137,532	8.62	8.70	8.68
Arkansas.....	4,012	4,142	4,373	64,058	65,127	66,647	6.26	6.36	6.56
California.....	77,614	79,288	85,514	822,751	838,615	875,682	9.43	9.45	9.77
Colorado.....	15,532	16,027	17,259	143,398	146,937	154,254	10.83	10.91	11.19
Connecticut.....	7,827	7,794	7,810	91,207	92,710	93,232	8.58	8.41	8.38
Delaware.....	3,964	3,907	3,700	24,739	25,344	25,563	16.02	15.42	14.47
District of Columbia.....	2,589	2,695	3,062	19,357	19,503	20,967	13.38	13.82	14.60
Florida.....	38,118	40,165	43,678	458,823	483,693	516,185	8.31	8.30	8.46
Georgia.....	18,820	19,424	20,825	208,350	214,200	225,577	9.03	9.07	9.23
Hawaii.....	2,097	2,152	2,325	30,950	31,538	33,063	6.78	6.82	7.03
Idaho.....	2,515	2,582	2,912	39,582	41,205	45,599	6.35	6.27	6.39
Illinois.....	27,606	28,200	28,821	310,589	315,093	320,756	8.82	8.95	8.99
Indiana.....	9,626	9,858	10,158	147,073	149,050	151,024	6.55	6.61	6.73
Iowa.....	4,316	4,324	4,548	80,745	81,334	82,542	5.35	5.32	5.51
Kansas.....	5,716	5,900	6,035	74,637	75,600	76,261	7.66	7.80	7.91
Kentucky.....	5,453	5,585	5,769	90,358	91,598	92,700	6.03	6.10	6.22
Louisiana.....	7,218	7,192	7,439	101,933	102,866	101,647	7.08	6.99	7.32
Maine.....	2,466	2,541	2,612	40,519	41,131	41,941	6.09	6.18	6.23
Maryland.....	13,428	13,974	14,632	132,782	135,699	140,021	10.11	10.30	10.45
Massachusetts.....	17,183	17,305	17,107	177,910	175,426	174,997	9.66	9.86	9.78
Michigan.....	16,937	16,988	17,049	236,221	237,392	235,245	7.17	7.16	7.25
Minnesota.....	12,834	13,055	13,348	145,364	148,276	150,896	8.83	8.80	8.85
Mississippi.....	3,269	3,274	3,336	59,565	60,364	60,442	5.49	5.42	5.52
Missouri.....	9,562	9,745	10,130	149,753	153,584	154,177	6.39	6.35	6.57
Montana.....	2,108	2,229	2,415	33,616	34,570	36,550	6.27	6.45	6.61
Nebraska.....	2,797	2,864	3,072	50,213	50,803	51,822	5.57	5.64	5.93
Nevada.....	5,387	5,493	5,975	53,080	55,713	61,061	10.15	9.86	9.79
New Hampshire.....	3,511	3,559	3,554	38,119	38,707	39,273	9.21	9.19	9.05
New Jersey.....	24,286	24,256	24,534	237,097	240,013	242,649	10.24	10.11	10.11
New Mexico.....	3,322	3,385	3,553	43,386	44,071	45,814	7.66	7.68	7.76
New York.....	35,926	36,706	37,346	500,559	509,873	514,992	7.18	7.20	7.25
North Carolina.....	14,869	15,426	16,908	207,500	212,457	221,898	7.17	7.26	7.62
North Dakota.....	964	972	1,035	20,371	20,763	21,286	4.73	4.68	4.86
Ohio.....	19,875	20,120	20,347	269,202	271,078	269,398	7.38	7.42	7.55
Oklahoma.....	6,859	6,965	7,301	85,633	87,180	89,440	8.01	7.99	8.16
Oregon.....	7,500	7,659	8,083	102,462	104,966	110,317	7.32	7.30	7.33
Pennsylvania.....	22,266	22,796	23,486	297,040	300,832	303,507	7.50	7.58	7.74
Rhode Island.....	1,976	2,043	2,059	29,172	29,900	30,322	6.77	6.83	6.79
South Carolina.....	5,869	6,048	6,551	98,735	100,947	105,060	5.94	5.99	6.24
South Dakota.....	1,206	1,234	1,266	24,314	24,693	25,419	4.96	5.00	4.98
Tennessee.....	8,196	8,226	8,772	129,458	131,355	134,776	6.33	6.26	6.51
Texas.....	45,062	45,522	47,520	481,804	489,782	508,092	9.35	9.29	9.35
Utah.....	5,474	5,716	6,531	60,011	62,644	68,612	9.12	9.12	9.52
Vermont.....	1,453	1,498	1,535	21,747	22,072	22,261	6.68	6.79	6.90
Virginia.....	18,868	19,758	21,678	182,783	188,533	196,849	10.32	10.48	11.01
Washington.....	13,171	13,480	14,411	166,229	170,848	179,368	7.92	7.89	8.03
West Virginia.....	2,257	2,259	2,308	40,225	40,732	40,480	5.61	5.55	5.70
Wisconsin.....	9,035	9,249	9,438	141,560	143,739	145,590	6.38	6.43	6.48
Wyoming.....	1,353	1,396	1,558	18,804	19,262	20,175	7.20	7.25	7.72
Puerto Rico.....	NA	NA	NA	NA	NA	NA	NA	NA	NA

na = not applicable; NA = not available

EPSCoR = Experimental Program to Stimulate Competitive Research

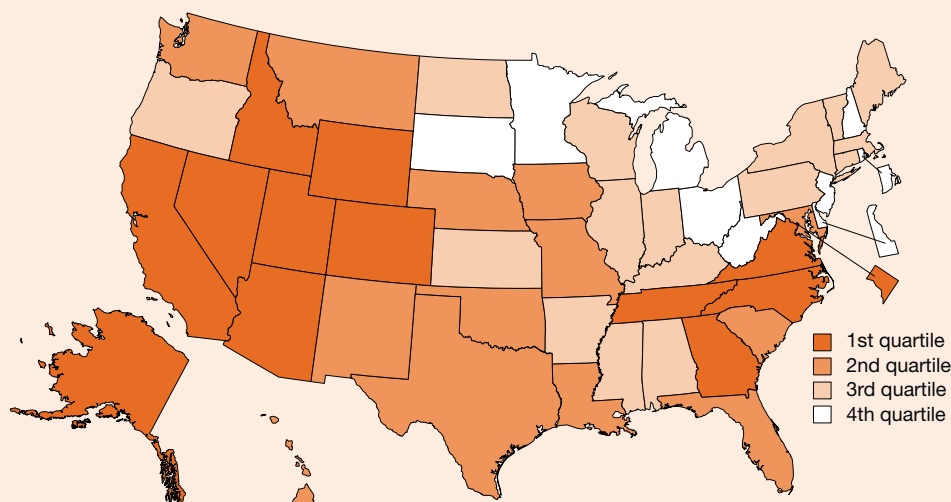
NOTE: For explanation of EPSCoR and non-EPSCoR averages, see chapter introduction.

SOURCE: Census Bureau, 1989–2006 Business Information Tracking Series, special tabulations.

Net High-Technology Business Formations as Share of All Business Establishments

Figure 8-47

Net high-technology business formations as share of all business establishments: 2006



1st quartile (0.93%–0.28%)	2nd quartile (0.27%–0.18%)	3rd quartile (0.16%–0.05%)	4th quartile (0.04% to –0.31%)
Alaska † Arizona California Colorado District of Columbia Georgia Idaho † Nevada † North Carolina Tennessee Utah Virginia Wyoming †	Florida Hawaii † Iowa Louisiana † Maryland Missouri Montana † Nebraska † New Mexico † Oklahoma † South Carolina † Texas Washington	Alabama † Arkansas † Connecticut Illinois Indiana Kansas † Kentucky † Maine † Massachusetts Mississippi † New York North Dakota † Oregon Pennsylvania Vermont † Wisconsin	Delaware † Michigan Minnesota New Hampshire † New Jersey † Ohio Rhode Island † South Dakota † West Virginia †

† EPSCoR state

SOURCE: Census Bureau, 1989–2004 Business Information Tracking Series, special tabulations. See table 8-47.

Findings

- In 2006, about 14,000 net new businesses in high-technology industries were formed in the United States. From a base of approximately 7.6 million total business establishments, 84,777 new business establishments were formed in high-technology industries and 70,746 ceased operations in those same industries.
- Almost all states showed more establishments beginning operations in high-technology industries than ceasing operations in 2006.
- Utah and Virginia showed the highest rates of net high-technology business formation in 2006. However, the largest numbers of net new businesses were formed in California, Texas, and Florida.
- EPSCoR states tended to be distributed throughout the state ranking, indicating that the rate of net high-technology business formation in many of these states was comparable to that in non-EPSCoR states.

The business base of a state is constantly changing as new businesses form and others cease to function. The term *net business formations* refers to the difference between the number of businesses that are formed and the number that cease operations during any particular year.

The ratio of the number of net business formations that occur in high-technology industries to the number of business establishments in a state indicates the changing role of high-technology industries in a state's economy. High positive values indicate an increasingly prominent role for these industries.

The data on business establishments in high-technology industries are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data for years prior to 2002 are not directly comparable.

Changes in company name, ownership, or address are not counted as business formations or business deaths. Net business formations cannot be used to directly link the number of high-technology business establishments in different years because the primary industry of some establishments may have changed during the period.

Table 8-47

Net high-technology business formations as share of all business establishments, by state: 2004 and 2006

State	Net high-technology business formations		All business establishments		High-technology formations/business establishments (%)	
	2004	2006	2004	2006	2004	2006
United States.....	11,598	14,031	7,366,978	7,585,035	0.16	0.18
Alabama.....	63	134	100,521	103,236	0.06	0.13
Alaska.....	22	66	19,309	19,838	0.11	0.33
Arizona.....	357	446	125,330	137,532	0.28	0.32
Arkansas.....	123	98	65,127	66,647	0.19	0.15
California.....	1,099	2,633	838,615	875,682	0.13	0.30
Colorado.....	490	509	146,937	154,254	0.33	0.33
Connecticut.....	-47	44	92,710	93,232	-0.05	0.05
Delaware.....	-52	-78	25,344	25,563	-0.21	-0.31
District of Columbia.....	66	195	19,503	20,967	0.34	0.93
Florida.....	1,743	1,009	483,693	516,185	0.36	0.20
Georgia.....	642	734	214,200	225,577	0.30	0.33
Hawaii.....	51	90	31,538	33,063	0.16	0.27
Idaho.....	54	151	41,205	45,599	0.13	0.33
Illinois.....	452	243	315,093	320,756	0.14	0.08
Indiana.....	208	164	149,050	151,024	0.14	0.11
Iowa.....	12	150	81,334	82,542	0.01	0.18
Kansas.....	160	114	75,600	76,261	0.21	0.15
Kentucky.....	116	42	91,598	92,700	0.13	0.05
Louisiana.....	-38	195	102,866	101,647	-0.04	0.19
Maine.....	81	31	41,131	41,941	0.20	0.07
Maryland.....	475	278	135,699	140,021	0.35	0.20
Massachusetts.....	156	193	175,426	174,997	0.09	0.11
Michigan.....	44	27	237,392	235,245	0.02	0.01
Minnesota.....	185	39	148,276	150,896	0.12	0.03
Mississippi.....	7	83	60,364	60,442	0.01	0.14
Missouri.....	195	279	153,584	154,177	0.13	0.18
Montana.....	108	98	34,570	36,550	0.31	0.27
Nebraska.....	64	98	50,803	51,822	0.13	0.19
Nevada.....	169	207	55,713	61,061	0.30	0.34
New Hampshire.....	30	13	38,707	39,273	0.08	0.03
New Jersey.....	-80	38	240,013	242,649	-0.03	0.02
New Mexico.....	37	98	44,071	45,814	0.08	0.21
New York.....	702	274	509,873	514,992	0.14	0.05
North Carolina.....	514	692	212,457	221,898	0.24	0.31
North Dakota.....	-1	34	20,763	21,286	0.00	0.16
Ohio.....	204	111	271,078	269,398	0.08	0.04
Oklahoma.....	75	236	87,180	89,440	0.09	0.26
Oregon.....	156	141	104,966	110,317	0.15	0.13
Pennsylvania.....	474	278	300,832	303,507	0.16	0.09
Rhode Island.....	67	8	29,900	30,322	0.22	0.03
South Carolina.....	175	230	100,947	105,060	0.17	0.22
South Dakota.....	16	9	24,693	25,419	0.06	0.04
Tennessee.....	39	372	131,355	134,776	0.03	0.28
Texas.....	401	1,221	489,782	508,092	0.08	0.24
Utah.....	283	382	62,644	68,612	0.45	0.56
Vermont.....	42	22	22,072	22,261	0.19	0.10
Virginia.....	845	986	188,533	196,849	0.45	0.50
Washington.....	346	476	170,848	179,368	0.20	0.27
West Virginia.....	16	-13	40,732	40,480	0.04	-0.03
Wisconsin.....	215	66	143,739	145,590	0.15	0.05
Wyoming.....	37	85	19,262	20,175	0.19	0.42
Puerto Rico.....	NA	NA	NA	NA	NA	NA

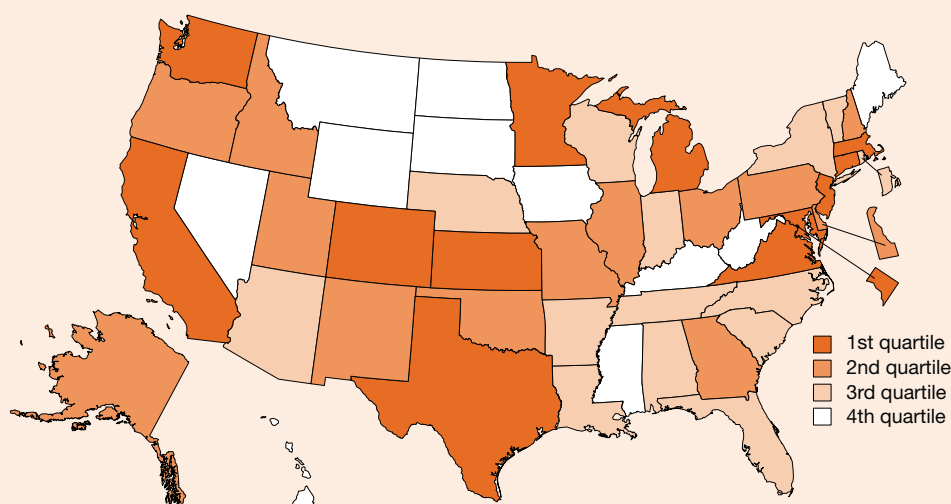
NA = not available

SOURCE: Census Bureau, 1989–2006 Business Information Tracking Series, special tabulations.

Employment in High-Technology Establishments as Share of Total Employment

Figure 8-48

Employment in high-technology establishments as share of total employment: 2006



1st quartile (16.32%–12.45%)	2nd quartile (12.30%–10.58%)	3rd quartile (10.56%–8.21%)	4th quartile (8.07%–5.63%)
California	Alaska †	Alabama †	Hawaii †
Colorado	Delaware †	Arizona	Iowa
Connecticut	Georgia †	Arkansas †	Kentucky †
District of Columbia	Idaho †	Florida	Maine †
Kansas †	Illinois	Indiana	Mississippi †
Maryland	Missouri	Louisiana †	Montana †
Massachusetts	New Hampshire †	Nebraska †	Nevada †
Michigan	New Mexico †	New York	North Dakota †
Minnesota	Ohio	North Carolina	South Dakota †
New Jersey	Oklahoma †	Rhode Island †	West Virginia †
Texas	Oregon	South Carolina †	Wyoming †
Virginia	Pennsylvania	Tennessee	
Washington	Utah	Vermont †	
		Wisconsin	

† EPSCoR state

SOURCE: Census Bureau, Business Information Tracking Series, special tabulations. See table 8-48.

Findings

- Employment in high-technology industries in the United States remained fairly steady between 2003 and 2006, at 13 million.
- Nationwide, the value of this indicator declined about 4%, from 11.96 in 2003 to 11.45 in 2006, as total employment grew during this period.
- On this indicator, states varied greatly in 2006, ranging from 5.6% to 16.3% of their workforce employed in high-technology industries.
- During the 2003–06 period, Washington, New York, Illinois, and Michigan recorded the largest net losses of jobs in high-technology industries, while California, Virginia, Florida, and Massachusetts posted the largest net gains of jobs in high-technology industries.
- States were distributed similarly on the high-technology employment and high-technology establishment indicators. EPSCoR states tended to have smaller percentages of their workforces employed in high-technology industries.

This indicator measures the extent to which a state's workforce is employed in high-technology industries. High-technology industries are defined as those in which the proportion of employees in technology-oriented occupations is at least twice the average proportion for all industries.

The data pertaining to establishments are based on their classification according to the 2002 edition of the North American Industry Classification System (NAICS). See table 8-A in the "Introduction" for a list of the 46 industries (by 4-digit NAICS code) that are defined as high technology. Data for years prior to 2002 are not directly comparable.

Table 8-48

Employment in high-technology establishments as share of total employment, by state: 2003, 2004, and 2006

State	Employment in high-technology establishments			All employment			High-technology/ all employment (%)		
	2003	2004	2006	2003	2004	2006	2003	2004	2006
United States.....	13,563,122	13,356,596	13,733,632	113,373,663	115,049,548	119,892,505	11.96	11.61	11.45
Alabama.....	152,879	158,927	162,197	1,597,265	1,628,733	1,713,185	9.57	9.76	9.47
Alaska.....	21,851	22,107	27,306	216,707	223,099	241,568	10.08	9.91	11.30
Arizona.....	234,603	238,462	246,648	1,997,990	2,043,729	2,334,665	11.74	11.67	10.56
Arkansas.....	95,180	101,124	93,648	988,822	1,007,283	1,041,868	9.63	10.04	8.99
California.....	1,781,830	1,767,202	1,826,638	12,986,496	13,260,306	13,830,274	13.72	13.33	13.21
Colorado.....	274,979	265,613	272,952	1,883,883	1,908,126	2,018,905	14.60	13.92	13.52
Connecticut.....	210,114	204,107	198,450	1,550,615	1,537,160	1,585,660	13.55	13.28	12.52
Delaware.....	52,349	54,164	47,749	385,098	391,647	388,178	13.59	13.83	12.30
District of Columbia...	54,314	57,250	57,297	422,912	436,791	446,502	12.84	13.11	12.83
Florida.....	576,274	587,452	618,540	6,548,276	6,863,196	7,534,165	8.80	8.56	8.21
Georgia.....	413,384	411,977	428,272	3,386,590	3,451,802	3,622,522	12.21	11.94	11.82
Hawaii.....	25,777	26,203	28,848	458,952	473,181	512,488	5.62	5.54	5.63
Idaho.....	55,706	53,738	59,082	466,379	488,557	546,108	11.94	11.00	10.82
Illinois.....	646,285	617,306	619,777	5,204,887	5,216,180	5,356,504	12.42	11.83	11.57
Indiana.....	219,598	219,694	224,644	2,540,554	2,586,282	2,672,558	8.64	8.49	8.41
Iowa.....	102,387	96,100	96,190	1,232,709	1,241,688	1,295,143	8.31	7.74	7.43
Kansas.....	155,023	153,046	146,849	1,109,699	1,115,930	1,142,487	13.97	13.71	12.85
Kentucky.....	121,838	119,167	125,204	1,471,622	1,489,285	1,551,791	8.28	8.00	8.07
Louisiana.....	137,029	129,722	143,846	1,603,492	1,623,431	1,592,682	8.55	7.99	9.03
Maine.....	35,184	36,221	37,934	488,788	494,165	508,061	7.20	7.33	7.47
Maryland.....	315,887	323,966	326,546	2,088,552	2,151,093	2,231,888	15.12	15.06	14.63
Massachusetts.....	460,984	455,749	496,630	2,974,164	2,979,251	3,043,643	15.50	15.30	16.32
Michigan.....	499,133	486,706	475,350	3,884,881	3,895,217	3,817,762	12.85	12.49	12.45
Minnesota.....	315,994	309,303	329,927	2,381,860	2,392,481	2,475,859	13.27	12.93	13.33
Mississippi.....	66,566	61,858	64,558	912,004	928,181	940,329	7.30	6.66	6.87
Missouri.....	254,299	257,290	263,494	2,387,245	2,420,994	2,467,626	10.65	10.63	10.68
Montana.....	20,296	20,452	26,958	302,932	314,806	342,461	6.70	6.50	7.87
Nebraska.....	68,975	69,724	64,779	774,858	774,187	789,117	8.90	9.01	8.21
Nevada.....	61,847	64,648	66,875	970,678	1,021,842	1,165,243	6.37	6.33	5.74
New Hampshire.....	63,264	63,907	64,914	540,132	550,869	577,322	11.71	11.60	11.24
New Jersey.....	550,224	558,921	550,515	3,578,674	3,609,297	3,644,967	15.38	15.49	15.10
New Mexico.....	60,399	61,149	68,627	571,057	580,443	628,472	10.58	10.53	10.92
New York.....	823,992	798,462	790,696	7,415,430	7,431,893	7,531,772	11.11	10.74	10.50
North Carolina.....	349,424	345,316	358,501	3,337,552	3,365,050	3,523,954	10.47	10.26	10.17
North Dakota.....	20,584	20,176	22,450	258,878	265,632	278,395	7.95	7.60	8.06
Ohio.....	531,491	512,352	518,835	4,769,406	4,761,492	4,824,859	11.14	10.76	10.75
Oklahoma.....	132,887	133,871	141,575	1,184,312	1,194,830	1,276,743	11.22	11.20	11.09
Oregon.....	152,140	147,549	161,641	1,338,380	1,355,101	1,461,339	11.37	10.89	11.06
Pennsylvania.....	566,406	551,971	549,180	5,028,650	5,106,171	5,189,349	11.26	10.81	10.58
Rhode Island.....	35,806	36,577	41,020	427,369	434,600	440,715	8.38	8.42	9.31
South Carolina.....	163,373	164,035	170,200	1,550,227	1,560,401	1,631,690	10.54	10.51	10.43
South Dakota.....	18,890	19,897	20,202	299,723	307,944	325,045	6.30	6.46	6.22
Tennessee.....	219,898	217,191	245,517	2,298,836	2,346,903	2,472,939	9.57	9.25	9.93
Texas.....	1,158,481	1,101,175	1,144,997	8,049,300	8,116,465	8,709,575	14.39	13.57	13.15
Utah.....	99,856	101,547	114,815	900,331	934,939	1,038,879	11.09	10.86	11.05
Vermont.....	29,402	27,572	27,001	256,401	256,040	263,759	11.47	10.77	10.24
Virginia.....	459,017	489,703	502,890	2,932,471	3,054,221	3,173,767	15.65	16.03	15.85
Washington.....	401,413	329,698	347,710	2,292,462	2,268,155	2,420,633	17.51	14.54	14.36
West Virginia.....	46,635	46,172	45,284	561,317	568,581	583,033	8.31	8.12	7.77
Wisconsin.....	233,967	245,257	253,499	2,382,979	2,434,580	2,481,998	9.82	10.07	10.21
Wyoming.....	15,008	14,820	16,375	180,866	187,318	204,058	8.30	7.91	8.02
Puerto Rico.....	NA	NA	NA	NA	NA	NA	NA	NA	NA

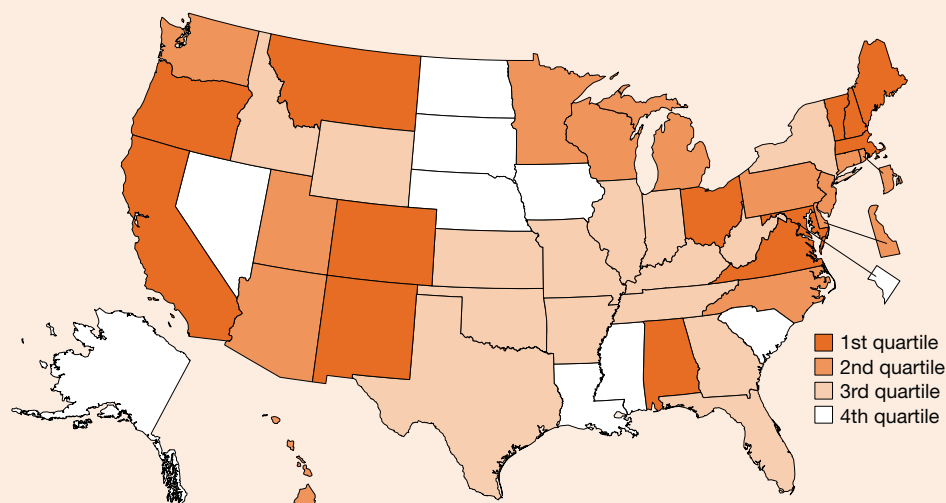
NA = not available

SOURCE: Census Bureau, 1989–2006 Business Information Tracking Series, special tabulations.

Average Annual Federal SBIR Funding per \$1 Million of Gross Domestic Product

Figure 8-49

Average annual federal SBIR funding per \$1 million of gross domestic product: 2006–08



1st quartile (\$626–\$148)	2nd quartile (\$147–\$88)	3rd quartile (\$76–\$37)	4th quartile (\$33–\$12)
Alabama †	Arizona	Arkansas †	Alaska †
California	Connecticut	Florida	District of Columbia
Colorado	Delaware †	Georgia	Iowa
Maine †	Hawaii †	Idaho †	Louisiana †
Maryland	Michigan	Illinois	Mississippi †
Massachusetts	Minnesota	Indiana	Nebraska †
Montana †	New Jersey	Kansas †	Nevada †
New Hampshire †	North Carolina	Kentucky †	North Dakota †
New Mexico †	Pennsylvania	Missouri	South Carolina †
Ohio	Rhode Island †	New York	South Dakota †
Oregon	Utah	Oklahoma †	
Vermont †	Washington	Tennessee	
Virginia	Wisconsin	Texas	
		West Virginia †	
		Wyoming †	

† EPSCoR state

SOURCES: Small Business Administration, Office of Technology, SBIR Program Statistics (various years); and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-49.

Findings

- Significant growth has occurred in the SBIR program in recent years as total annual awards increased from about \$1.1 billion in 1998–2000 to about \$1.7 billion in 2006–08.
- SBIR funds are concentrated in relatively few states; the total of annual state awards may range from less than \$1 million to more than \$300 million.
- Many of the states with the highest rankings on this indicator are locations of federal laboratories or well-recognized academic research institutions from which innovative small businesses have emerged.
- States with a high ranking on this indicator also tended to rank high on the high-technology and venture capital indicators.

Funds awarded through the federal Small Business Innovation Research (SBIR) program support technological innovation in companies with 500 or fewer employees. Awards are made to evaluate the feasibility and scientific merit of new technology (up to \$100,000) and to develop the technology to a point where it can be commercialized (up to \$750,000). The total award dollars include both Phase 1 and Phase 2 SBIR awards.

Because of year-to-year fluctuations, this indicator is calculated using 3-year averages. The average annual SBIR award dollars won by small businesses in a state are divided by the average annual gross domestic product. A high value indicates that small business firms in a state are doing cutting-edge development work that attracts federal support.

Table 8-49

Average annual federal SBIR funding per \$1 million of gross domestic product, by state: 1998–2000, 2002–04, and 2006–08

State	Average SBIR funding (current \$thousands)			Average state GDP (current \$millions)			SBIR funding (\$)/ \$1 million GDP		
	1998–2000	2002–04	2006–08	1998–2000	2002–04	2006–08	1998– 2000	2002– 04	2006– 08
United States.....	1,060,758	1,725,643	1,731,667	9,209,969	10,963,871	13,676,177	115	157	127
Alabama.....	19,304	33,144	38,477	111,052	131,847	164,792	174	251	233
Alaska.....	318	495	707	24,840	31,836	45,182	13	16	16
Arizona.....	20,428	28,534	28,187	148,211	182,467	244,438	138	156	115
Arkansas.....	1,443	3,240	6,631	64,759	76,675	94,855	22	42	70
California.....	217,278	360,660	340,849	1,184,540	1,422,133	1,800,632	183	254	189
Colorado.....	55,158	80,814	79,329	157,102	188,960	237,064	351	428	335
Connecticut.....	20,674	29,454	22,096	152,037	172,690	212,468	136	171	104
Delaware.....	3,814	4,156	6,172	39,247	48,739	60,512	97	85	102
District of Columbia...	3,675	5,840	3,011	55,596	72,450	93,076	66	81	32
Florida.....	21,897	37,526	42,914	443,689	563,008	731,715	49	67	59
Georgia.....	11,278	16,484	16,813	274,527	321,024	390,223	41	51	43
Hawaii.....	3,583	5,772	7,581	38,792	46,777	61,352	92	123	124
Idaho.....	1,001	3,664	3,164	32,481	39,142	50,779	31	94	62
Illinois.....	15,985	22,500	27,053	443,933	510,618	609,086	36	44	44
Indiana.....	5,068	10,689	16,932	186,355	216,259	246,664	27	49	69
Iowa.....	1,561	4,875	4,290	86,655	103,834	128,891	18	47	33
Kansas.....	3,374	4,938	4,326	79,160	93,853	116,894	43	53	37
Kentucky.....	2,298	4,237	5,602	111,398	125,786	152,345	21	34	37
Louisiana.....	1,453	3,126	4,326	124,551	148,154	213,844	12	21	20
Maine.....	1,948	5,604	7,094	33,545	40,656	48,052	58	138	148
Maryland.....	51,664	93,258	77,717	171,231	215,216	266,532	302	433	292
Massachusetts.....	164,078	242,323	219,333	254,548	295,018	350,605	645	821	626
Michigan.....	21,486	33,544	43,965	324,273	357,314	380,089	66	94	116
Minnesota.....	13,374	24,805	24,991	174,288	210,064	253,304	77	118	99
Mississippi.....	1,546	3,232	1,040	62,605	72,301	88,305	25	45	12
Missouri.....	5,721	7,342	8,645	169,985	196,271	229,120	34	37	38
Montana.....	3,622	7,045	8,278	20,552	25,513	34,046	176	276	243
Nebraska.....	1,641	2,998	2,438	53,653	64,322	79,552	31	47	31
Nevada.....	1,830	7,772	3,364	68,732	89,770	127,167	27	87	26
New Hampshire.....	12,602	22,174	22,501	40,944	48,606	57,806	308	456	389
New Jersey.....	30,790	47,712	40,718	328,735	390,642	462,949	94	122	88
New Mexico.....	19,136	21,965	22,293	48,547	57,810	76,080	394	380	293
New York.....	42,872	75,707	79,435	731,452	856,081	1,091,942	59	88	73
North Carolina.....	13,936	22,739	35,124	259,759	308,945	393,523	54	74	89
North Dakota.....	1,110	1,960	918	17,180	21,430	28,261	65	91	32
Ohio.....	44,859	67,535	70,856	360,448	405,302	463,139	124	167	153
Oklahoma.....	3,054	6,630	6,820	84,106	104,044	138,622	36	64	49
Oregon.....	14,627	19,556	26,881	105,886	123,868	156,930	138	158	171
Pennsylvania.....	36,393	64,864	77,650	375,843	441,249	531,060	97	147	146
Rhode Island.....	2,353	7,783	6,753	31,330	39,446	46,666	75	197	145
South Carolina.....	2,296	7,397	4,630	108,041	127,106	151,808	21	58	30
South Dakota.....	1,244	1,291	493	21,815	27,785	34,300	57	46	14
Tennessee.....	8,342	9,411	12,256	168,457	202,218	243,916	50	47	50
Texas.....	39,651	71,023	77,916	675,146	837,983	1,144,532	59	85	68
Utah.....	9,621	14,299	15,315	63,857	76,327	104,466	151	187	147
Vermont.....	3,317	4,808	4,760	16,835	20,656	24,538	197	233	194
Virginia.....	60,913	98,276	96,609	243,330	304,390	382,864	250	323	252
Washington.....	26,052	46,713	45,128	210,710	241,841	308,449	124	193	146
West Virginia.....	1,306	5,719	2,153	40,694	47,063	58,460	32	122	37
Wisconsin.....	8,724	17,592	24,686	168,477	196,807	232,039	52	89	106
Wyoming.....	1,060	2,418	2,447	16,040	21,575	32,243	66	112	76
Puerto Rico.....	236	216	8	57,876	75,220	NA	4	3	NA

NA = not available

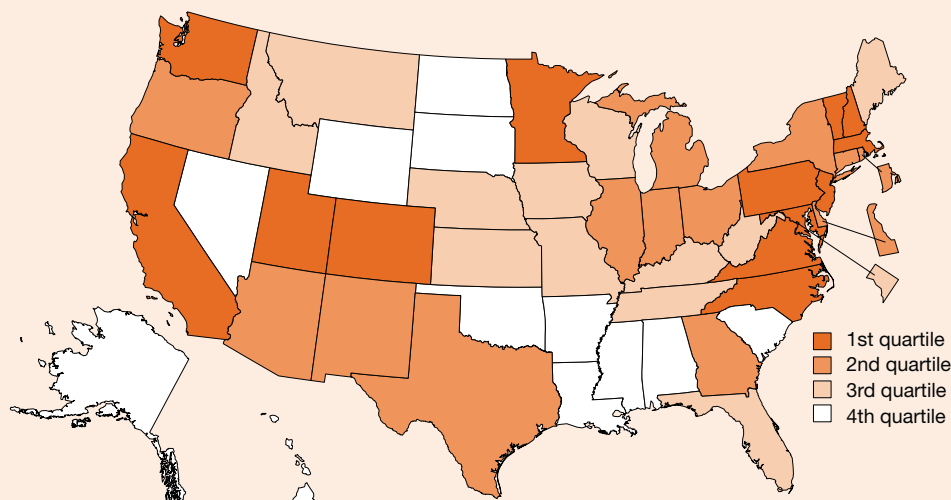
GDP = gross domestic product; SBIR = Small Business Innovation Research

SOURCES: Small Business Administration, Office of Technology, SBIR program statistics (various years); Bureau of Economic Analysis, Gross Domestic Product data; and Government of Puerto Rico, Office of the Governor.

Venture Capital Disbursed per \$1,000 of Gross Domestic Product

Figure 8-50

Venture capital disbursed per \$1,000 of gross domestic product: 2008



1st quartile (\$8.15–\$1.15)	2nd quartile (\$1.14–\$0.48)	3rd quartile (\$0.43–\$0.19)	4th quartile (\$0.17–\$0.00)
California Colorado Maryland Massachusetts Minnesota New Hampshire † New Jersey North Carolina Pennsylvania Utah Vermont † Virginia Washington	Arizona Connecticut Delaware † Georgia Illinois Indiana Michigan New Mexico † New York Ohio Oregon Rhode Island † Texas	District of Columbia Florida Idaho † Iowa Kansas † Kentucky † Maine † Missouri Montana † Nebraska † Tennessee West Virginia † Wisconsin	Alabama † Alaska † Arkansas † Hawaii † Louisiana † Mississippi † Nevada † North Dakota † Oklahoma † South Carolina † South Dakota † Wyoming †

† EPSCoR state

SOURCES: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree Survey™, special tabulations; and Bureau of Economic Analysis, Gross Domestic Product data. See table 8-50.

Findings

- The total amount of venture capital invested in the United States increased from about \$21 billion in 1998 to about \$28 billion in 2008, an overall increase of 34%. However, this was a decade of great volatility, as U.S. venture capital investment peaked at \$106 billion in 2000.
- Venture capital is concentrated in relatively few states. Companies in California received 50% of the total venture capital disbursed in the United States in 2008, followed by companies in Massachusetts with 11%.
- The distribution of venture capital is becoming more concentrated, making it more difficult for companies in many states to access this type of financing. Thirty-five states reported lower values for this indicator in 2008 than in 1998.
- The average indicator value for EPSCoR states was substantially lower than that of non-EPSCoR states. The state distribution of venture capital was similar to indicators of high-technology business activity.

Venture capital represents an important source of funding for startup companies. It supports the growth and expansion of these companies early in their development, before they establish a predictable sales history that would qualify them for other types of financing.

This indicator shows the relative magnitude of venture capital investments in a state after adjusting for the size of the state's economy. The indicator is expressed as dollars of venture capital disbursed per \$1,000 of gross domestic product. High values indicate that companies in those states are successfully attracting venture capital to fuel their growth. Access to venture capital financing varies greatly among states.

Table 8-50

Venture capital disbursed per \$1,000 of gross domestic product, by state: 1998, 2003, and 2008

State	Venture capital disbursed (current \$millions)			State GDP (current \$millions)			Venture capital (\$)/ \$1,000 GDP		
	1998	2003	2008	1998	2003	2008	1998	2003	2008
United States.....	21,037	19,776	28,284	8,679,660	10,886,172	14,165,565	2.42	1.82	2.00
Alabama.....	82	30	24	106,656	130,210	170,014	0.77	0.23	0.14
Alaska.....	0	0	0	23,165	31,219	47,912	0.00	0.00	0.00
Arizona.....	210	73	208	137,581	182,011	248,888	1.53	0.40	0.84
Arkansas.....	7	1	0	61,861	75,685	98,331	0.11	0.01	0.00
California.....	7,955	8,564	14,264	1,085,884	1,406,511	1,846,757	7.33	6.09	7.72
Colorado.....	726	628	813	143,160	187,397	248,603	5.07	3.35	3.27
Connecticut.....	373	212	127	145,373	169,885	216,174	2.57	1.25	0.59
Delaware.....	0	0	63	36,831	48,587	61,828	0.00	0.01	1.01
District of Columbia...	47	56	31	51,682	71,719	97,235	0.91	0.78	0.32
Florida.....	552	309	240	417,169	559,021	744,120	1.32	0.55	0.32
Georgia.....	431	295	426	255,612	317,922	397,756	1.68	0.93	1.07
Hawaii.....	4	13	7	37,549	46,441	63,847	0.11	0.28	0.11
Idaho.....	30	52	12	29,800	38,148	52,747	1.02	1.37	0.23
Illinois.....	429	377	444	423,855	510,296	633,697	1.01	0.74	0.70
Indiana.....	39	25	124	178,909	215,434	254,861	0.22	0.11	0.48
Iowa.....	9	0	40	83,665	102,210	135,702	0.11	0.00	0.30
Kansas.....	10	25	46	76,005	93,560	122,731	0.14	0.27	0.37
Kentucky.....	38	5	30	108,813	124,892	156,436	0.34	0.04	0.19
Louisiana.....	68	1	8	118,085	146,726	222,218	0.58	0.01	0.04
Maine.....	62	1	20	31,731	40,152	49,709	1.94	0.02	0.41
Maryland.....	328	348	477	161,954	213,306	273,333	2.03	1.63	1.74
Massachusetts.....	2,009	2,744	2,974	236,079	293,840	364,988	8.51	9.34	8.15
Michigan.....	124	80	246	309,431	359,030	382,544	0.40	0.22	0.64
Minnesota.....	361	233	491	164,897	208,179	262,847	2.19	1.12	1.87
Mississippi.....	4	1	0	60,513	72,259	91,782	0.06	0.01	0.00
Missouri.....	611	78	87	164,267	195,547	237,797	3.72	0.40	0.36
Montana.....	0	0	16	19,884	25,526	35,891	0.00	0.00	0.43
Nebraska.....	29	205	16	52,076	64,628	83,273	0.56	3.17	0.19
Nevada.....	24	40	13	63,635	87,828	131,233	0.38	0.46	0.10
New Hampshire.....	185	154	181	39,102	48,198	60,005	4.73	3.20	3.02
New Jersey.....	476	886	708	314,117	389,077	474,936	1.52	2.28	1.49
New Mexico.....	8	4	69	45,918	57,469	79,901	0.17	0.06	0.87
New York.....	1,299	660	1,299	686,906	850,243	1,144,481	1.89	0.78	1.14
North Carolina.....	327	387	459	242,904	306,018	400,192	1.34	1.26	1.15
North Dakota.....	1	15	0	16,936	21,672	31,208	0.03	0.67	0.01
Ohio.....	309	179	248	348,723	402,399	471,508	0.89	0.44	0.53
Oklahoma.....	101	31	17	79,341	103,452	146,448	1.28	0.30	0.12
Oregon.....	54	108	176	100,951	121,638	161,573	0.53	0.88	1.09
Pennsylvania.....	562	499	693	361,800	440,704	553,301	1.55	1.13	1.25
Rhode Island.....	26	66	39	29,537	39,357	47,364	0.88	1.66	0.83
South Carolina.....	137	14	26	102,945	127,885	156,384	1.33	0.11	0.17
South Dakota.....	0	4	1	20,771	27,418	36,959	0.00	0.13	0.01
Tennessee.....	108	84	65	160,872	200,279	252,127	0.67	0.42	0.26
Texas.....	1,171	1,250	1,283	629,209	828,797	1,223,511	1.86	1.51	1.05
Utah.....	117	107	194	60,168	75,428	109,777	1.94	1.41	1.76
Vermont.....	1	5	43	15,935	20,575	25,442	0.09	0.25	1.69
Virginia.....	766	413	484	226,569	302,540	397,025	3.38	1.37	1.22
Washington.....	736	464	955	195,794	240,813	322,778	3.76	1.92	2.96
West Virginia.....	2	13	24	39,500	46,452	61,652	0.05	0.27	0.39
Wisconsin.....	90	38	75	160,681	195,904	240,429	0.56	0.19	0.31
Wyoming.....	0	0	2	14,859	21,685	35,310	0.00	0.00	0.04
Puerto Rico.....	NA	NA	NA	54,086	74,827	NA	NA	NA	NA

NA = not available

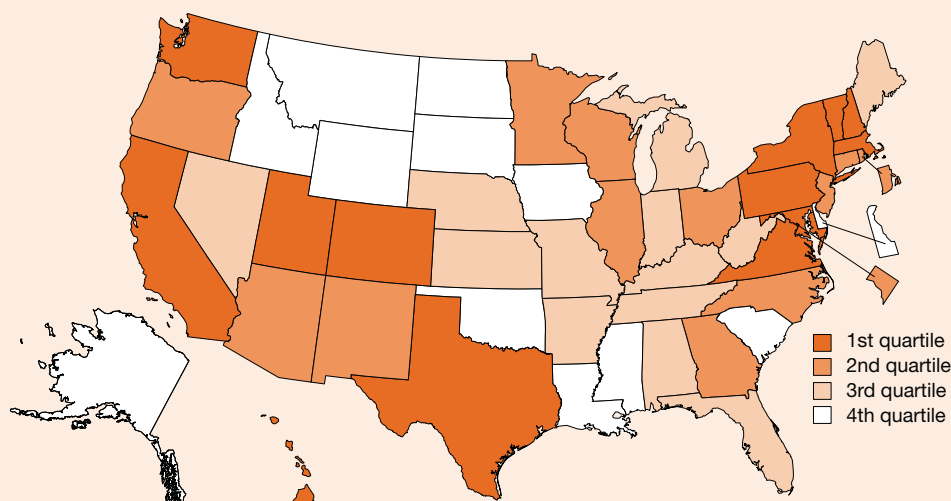
GDP = gross domestic product

SOURCES: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree™ Survey, special tabulations; Bureau of Economic Analysis, Gross Domestic Product data; and Government of Puerto Rico, Office of the Governor.

Venture Capital Deals as Share of High-Technology Business Establishments

Figure 8-51

Venture capital deals as share of high-technology business establishments: 2006



1st quartile (2.31%–0.40%)	2nd quartile (0.39%–0.19%)	3rd quartile (0.15%–0.10%)	4th quartile (0.08%–0.00%)
California Colorado Hawaii † Maryland Massachusetts New Hampshire † New York Pennsylvania Texas Utah Vermont † Virginia Washington	Arizona Connecticut District of Columbia Georgia Illinois Minnesota New Jersey New Mexico † North Carolina Ohio Oregon Rhode Island † Wisconsin	Alabama † Arkansas † Florida Indiana Kansas † Kentucky † Maine † Michigan Missouri Nebraska † Nevada † Tennessee West Virginia †	Alaska † Delaware † Idaho † Iowa Louisiana † Mississippi † Montana † North Dakota † Oklahoma † South Carolina † South Dakota † Wyoming †

† EPSCoR state

SOURCES: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree Survey™, special tabulations; and Census Bureau, Business Information Tracking Series, special tabulations. See table 8-51.

Findings

- The number of venture capital deals that involved U.S. companies increased from about 2,900 deals in 2003 to about 3,700 deals in 2006.
- In 2006, venture capital deals were concentrated in only a few states. Indicator values ranged from a high of 2.31% to a low of zero with a median value of 0.20%.
- Companies in high-technology industries located in Massachusetts were the most successful in accessing venture capital investments in 2006, with a 2.31% rate. California companies in high-technology industries obtained venture capital investment at a rate of 1.81%. No other states reached a rate of 1.00%.
- In 2006, companies in EPSCoR states tended to receive little venture capital investment, and no venture capital deals were reported in three EPSCoR states.

This indicator provides a measure of the extent to which high-technology companies in a state receive venture capital investments. The value of the indicator is calculated by dividing the number of venture capital deals by the number of companies operating in high-technology industries in that state. In most cases, a company will not receive more than one infusion of venture capital in a given year.

Venture capital investment can bring needed capital and management expertise that can help to grow a high-technology company. High values indicate that high-technology companies in a state are frequently using venture capital to facilitate their growth and development.

Table 8-51

Venture capital deals as share of high-technology business establishments, by state: 2003, 2004, and 2006

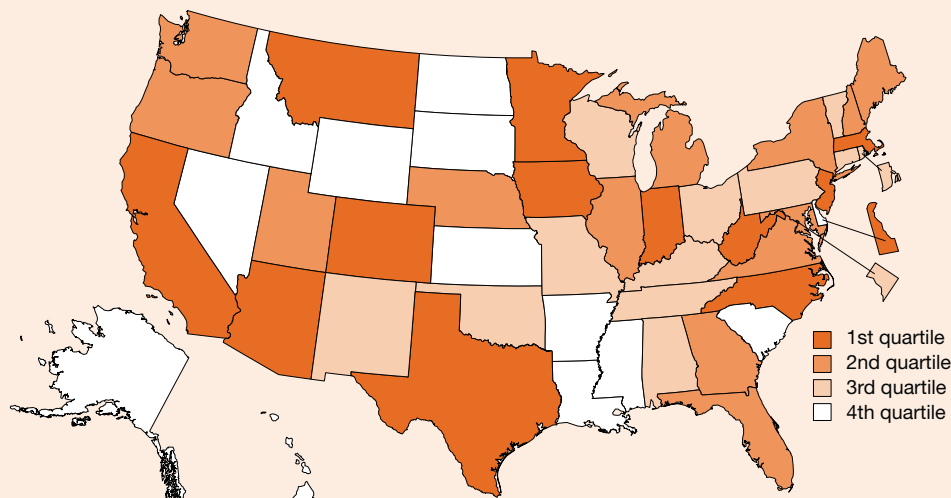
State	Venture capital deals			High-technology establishments			Venture capital deals/ high-technology establishment (%)		
	2003	2004	2006	2003	2004	2006	2003	2004	2006
United States.....	2,903	3,036	3,672	590,417	603,642	633,727	0.49	0.50	0.58
Alabama.....	9	5	7	6,347	6,407	6,613	0.14	0.08	0.11
Alaska.....	0	0	0	1,345	1,358	1,494	0.00	0.00	0.00
Arizona.....	16	12	29	10,433	10,901	11,942	0.15	0.11	0.24
Arkansas.....	3	1	6	4,012	4,142	4,373	0.07	0.02	0.14
California.....	1,122	1,225	1,549	77,614	79,288	85,514	1.45	1.55	1.81
Colorado.....	72	75	98	15,532	16,027	17,259	0.46	0.47	0.57
Connecticut.....	34	32	30	7,827	7,794	7,810	0.43	0.41	0.38
Delaware.....	1	1	3	3,964	3,907	3,700	0.03	0.03	0.08
District of Columbia...	6	8	8	2,589	2,695	3,062	0.23	0.30	0.26
Florida.....	61	57	56	38,118	40,165	43,678	0.16	0.14	0.13
Georgia.....	55	73	81	18,820	19,424	20,825	0.29	0.38	0.39
Hawaii.....	6	4	10	2,097	2,152	2,325	0.29	0.19	0.43
Idaho.....	5	2	1	2,515	2,582	2,912	0.20	0.08	0.03
Illinois.....	58	51	55	27,606	28,200	28,821	0.21	0.18	0.19
Indiana.....	8	9	15	9,626	9,858	10,158	0.08	0.09	0.15
Iowa.....	1	4	2	4,316	4,324	4,548	0.02	0.09	0.04
Kansas.....	2	9	7	5,716	5,900	6,035	0.03	0.15	0.12
Kentucky.....	3	5	7	5,453	5,585	5,769	0.06	0.09	0.12
Louisiana.....	1	3	3	7,218	7,192	7,439	0.01	0.04	0.04
Maine.....	2	3	4	2,466	2,541	2,612	0.08	0.12	0.15
Maryland.....	84	85	110	13,428	13,974	14,632	0.63	0.61	0.75
Massachusetts.....	378	365	395	17,183	17,305	17,107	2.20	2.11	2.31
Michigan.....	17	19	18	16,937	16,988	17,049	0.10	0.11	0.11
Minnesota.....	58	47	39	12,834	13,055	13,348	0.45	0.36	0.29
Mississippi.....	4	5	1	3,269	3,274	3,336	0.12	0.15	0.03
Missouri.....	23	10	13	9,562	9,745	10,130	0.24	0.10	0.13
Montana.....	1	0	0	2,108	2,229	2,415	0.05	0.00	0.00
Nebraska.....	2	0	3	2,797	2,864	3,072	0.07	0.00	0.10
Nevada.....	6	5	7	5,387	5,493	5,975	0.11	0.09	0.12
New Hampshire.....	32	23	21	3,511	3,559	3,554	0.91	0.65	0.59
New Jersey.....	88	88	94	24,286	24,256	24,534	0.36	0.36	0.38
New Mexico.....	5	8	9	3,322	3,385	3,553	0.15	0.24	0.25
New York.....	119	149	209	35,926	36,706	37,346	0.33	0.41	0.56
North Carolina.....	76	57	62	14,869	15,426	16,908	0.51	0.37	0.37
North Dakota.....	2	1	0	964	972	1,035	0.21	0.10	0.00
Ohio.....	25	32	41	19,875	20,120	20,347	0.13	0.16	0.20
Oklahoma.....	2	11	6	6,859	6,965	7,301	0.03	0.16	0.08
Oregon.....	21	27	31	7,500	7,659	8,083	0.28	0.35	0.38
Pennsylvania.....	90	92	128	22,266	22,796	23,486	0.40	0.40	0.55
Rhode Island.....	10	7	7	1,976	2,043	2,059	0.51	0.34	0.34
South Carolina.....	4	5	3	5,869	6,048	6,551	0.07	0.08	0.05
South Dakota.....	1	3	1	1,206	1,234	1,266	0.08	0.24	0.08
Tennessee.....	22	23	11	8,196	8,226	8,772	0.27	0.28	0.13
Texas.....	165	162	188	45,062	45,522	47,520	0.37	0.36	0.40
Utah.....	22	27	39	5,474	5,716	6,531	0.40	0.47	0.60
Vermont.....	6	4	9	1,453	1,498	1,535	0.41	0.27	0.59
Virginia.....	80	73	89	18,868	19,758	21,678	0.42	0.37	0.41
Washington.....	81	114	143	13,171	13,480	14,411	0.61	0.85	0.99
West Virginia.....	5	3	3	2,257	2,259	2,308	0.22	0.13	0.13
Wisconsin.....	8	10	20	9,035	9,249	9,438	0.09	0.11	0.21
Wyoming.....	1	2	1	1,353	1,396	1,558	0.07	0.14	0.06
Puerto Rico.....	1	1	2	NA	NA	NA	NA	NA	NA

NA = not available

SOURCES: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree™ Survey, special tabulations; and Census Bureau, 1989–2006 Business Information Tracking Series, special tabulations.

Venture Capital Disbursed per Venture Capital Deal

Figure 8-52
Venture capital disbursed per venture capital deal: 2008
 (Millions of dollars)



1st quartile (\$24.00–\$7.34)	2nd quartile (\$6.65–\$4.91)	3rd quartile (\$4.77–\$2.79)	4th quartile (\$2.38–\$0.00)
Arizona California Colorado Delaware † Indiana Iowa Massachusetts Minnesota Montana † New Jersey North Carolina Texas West Virginia †	Florida Georgia Illinois Maine † Maryland Michigan Nebraska † New Hampshire † New York Oregon Utah Virginia Washington	Alabama † Connecticut District of Columbia Kentucky † Missouri New Mexico † Ohio Oklahoma † Pennsylvania Rhode Island † Tennessee Vermont † Wisconsin	Alaska † Arkansas † Hawaii † Idaho † Kansas † Louisiana † Mississippi † Nevada † North Dakota † South Carolina † South Dakota † Wyoming †

† EPSCoR state

SOURCE: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree Survey™, special tabulations. See table 8-52.

Findings

- In 2008, the size of the average venture capital investment in the United States was about \$7 million per deal. This represented an increase in investment size from about \$5 million per deal in 1998 but a decline from \$13 million per deal in 2000 expressed in current dollars.
- The total number of venture capital deals has risen slightly, increasing from 3,632 deals in 1998 to 3,806 in 2008.
- In 2008, the state distribution on this indicator was skewed from a high value of \$24 million per deal to a low of zero, with a median value of \$5.03 million per deal. The value of this indicator continued to show a high level of variability from year to year and among states.

This indicator provides a measure of the average size of the venture capital investments being made in a state. The indicator is expressed as the total dollars of venture capital invested in millions divided by the number of companies receiving venture capital. The availability of venture capital may vary widely based on stage of investment, type of company, and numerous other factors.

This indicator provides some measure of the magnitude of investment that developing companies in a specific state have attracted from venture capital sources. Some states have relatively few venture capital deals taking place in a given year; thus, the value of this indicator may show large fluctuations on a year-to-year basis. Eighteen states reported fewer than 10 venture capital deals in 2008. In such states, a single large or small venture capital investment can significantly affect the value of this indicator.

Table 8-52

Venture capital disbursed per venture capital deal, by state: 1998, 2003, and 2008

State	Venture capital disbursed (current \$millions)			Venture capital deals			Venture capital/deal (current \$millions)		
	1998	2003	2008	1998	2003	2008	1998	2003	2008
United States.....	21,037	19,776	28,284	3,632	2,943	3,806	5.79	6.72	7.43
Alabama.....	82	30	24	15	9	8	5.49	3.32	3.01
Alaska.....	0	0	0	0	0	0	0.00	0.00	0.00
Arizona.....	210	73	208	36	16	20	5.84	4.58	10.40
Arkansas.....	7	1	0	2	3	0	3.45	0.37	0.00
California.....	7,955	8,564	14,264	1,388	1,135	1,552	5.73	7.55	9.19
Colorado.....	726	628	813	122	70	100	5.95	8.97	8.13
Connecticut.....	373	212	127	74	34	34	5.05	6.24	3.74
Delaware.....	0	0	63	0	1	6	0.00	0.40	10.45
District of Columbia...	47	56	31	3	6	11	15.63	9.35	2.79
Florida.....	552	309	240	62	62	36	8.90	4.99	6.65
Georgia.....	431	295	426	98	58	80	4.39	5.09	5.33
Hawaii.....	4	13	7	3	5	6	1.40	2.56	1.20
Idaho.....	30	52	12	3	5	6	10.10	10.44	1.98
Illinois.....	429	377	444	70	56	67	6.13	6.73	6.63
Indiana.....	39	25	124	8	8	16	4.88	3.06	7.73
Iowa.....	9	0	40	7	0	5	1.26	0.00	8.04
Kansas.....	10	25	46	3	11	23	3.47	2.26	1.98
Kentucky.....	38	5	30	16	3	10	2.34	1.80	2.95
Louisiana.....	68	1	8	11	1	10	6.18	1.20	0.82
Maine.....	62	1	20	11	2	4	5.59	0.45	5.05
Maryland.....	328	348	477	54	87	97	6.08	4.00	4.91
Massachusetts.....	2,009	2,744	2,974	391	381	405	5.14	7.20	7.34
Michigan.....	124	80	246	32	16	43	3.88	5.01	5.71
Minnesota.....	361	233	491	79	58	47	4.57	4.02	10.44
Mississippi.....	4	1	0	2	4	0	1.75	0.20	0.00
Missouri.....	611	78	87	19	19	24	32.16	4.13	3.60
Montana.....	0	0	16	0	0	2	0.00	0.00	7.80
Nebraska.....	29	205	16	5	3	3	5.82	68.20	5.33
Nevada.....	24	40	13	10	6	6	2.42	6.70	2.10
New Hampshire.....	185	154	181	26	32	28	7.11	4.82	6.47
New Jersey.....	476	886	708	76	90	90	6.27	9.85	7.87
New Mexico.....	8	4	69	4	5	19	1.93	0.72	3.65
New York.....	1,299	660	1,299	193	118	235	6.73	5.59	5.53
North Carolina.....	327	387	459	82	77	51	3.98	5.02	9.00
North Dakota.....	1	15	0	1	2	2	0.50	7.25	0.20
Ohio.....	309	179	248	63	28	52	4.91	6.39	4.77
Oklahoma.....	101	31	17	11	2	5	9.22	15.55	3.46
Oregon.....	54	108	176	18	21	35	2.97	5.12	5.03
Pennsylvania.....	562	499	693	138	97	171	4.07	5.15	4.05
Rhode Island.....	26	66	39	5	10	10	5.20	6.55	3.92
South Carolina.....	137	14	26	16	4	11	8.56	3.58	2.38
South Dakota.....	0	4	1	0	1	1	0.00	3.50	0.50
Tennessee.....	108	84	65	24	23	21	4.48	3.67	3.10
Texas.....	1,171	1,250	1,283	188	168	146	6.23	7.44	8.79
Utah.....	117	107	194	33	22	33	3.54	4.84	5.87
Vermont.....	1	5	43	2	6	9	0.70	0.87	4.77
Virginia.....	766	413	484	102	82	81	7.51	5.04	5.97
Washington.....	736	464	955	109	83	164	6.75	5.58	5.82
West Virginia.....	2	13	24	1	5	1	2.00	2.52	24.00
Wisconsin.....	90	38	75	16	8	19	5.64	4.70	3.96
Wyoming.....	0	0	2	0	0	1	0.00	0.00	1.50
Puerto Rico.....	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available

SOURCE: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree™ Survey, special tabulations.